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PICTORIAL PRACTICAL FRUIT GROWING

A CONCISE MANUAL

GIVING INSTRUCTIONS FOR THE MANAGEMENT
OF EVERY IMPORTANT FRUIT IN CULTIVATION

BY

WALTER P. WRIGHT

Horticultural Superintendent under the Kent County Council

WITH UPWARDS OF ONE HUNDRED ILLUSTRATIONS

CASSELL AND COMPANY, LIMITED

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PREFACE

THIS work is uniform with others on Vegetables, Roses, Chrysanthemums, Carnations, and Greenhouse Management, in all of which practical illustration is a prominent feature. The cultural instructions are concise and plain.

The object is to make every point as clear as possible in the fewest words, and the large number of plain figures render it possible to give the necessary instructions more briefly than would be safe without them.

WALTER P. WRIGHT.



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PICTORIAL PRACTICAL FRUIT GROWING

Chapter 1.—The Art of Utilising Space.



THE greatest of the many delusions which mislead people who want to grow their own fruit is that it cannot be done in a small garden.

The largest quantity of fruit cannot be grown on a small plot of ground, but the best quality can. The man who knows everything, and has likewise forgotten a good deal, may point to the low standard of merit observable in the market produce sent up from the little homestead; but he forgets that the sender has very likely inherited a legacy from a predecessor who first of all put in bad trees and afterwards

made worse of them by ignorant management. Where trees are well handled in small gardens they yield superb fruit, although the quantity of it may be small.

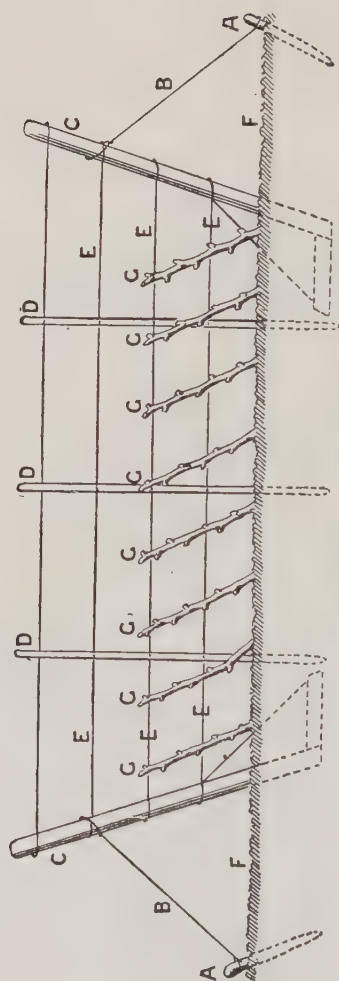
I want to show how it is possible to get good fruit in nearly every garden, however limited it may be; and I also want to make clear that much depends on a wise utilisation of the space at disposal. The art of economical fruit culture is to make the best of every inch of ground. By selecting the right type of tree, and cultivating and feeding the soil thoroughly, a score of healthy trees, yielding large, juicy fruit of the finest quality, may be grown on a space often devoted to only one.

If a dead fruit grower of the old school heard of sixty fruit trees being grown on 3 square rods of ground in an open situation in the kitchen garden, without wall or fence, he would turn in his grave; yet there is nothing whatever impracticable about it. On the contrary, it may be done with ease, without a great deal of expense, and with immense interest and benefit to the cultivator.

Fig. 1 (page 2) represents a framework of posts and wire by means of which twenty-four trees may be grown in 20 square yards of ground. *AA* represent stumps driven into the ground, and *CC* show stout posts connected with and supported by the stumps through the medium of stout galvanised wire, *BB*. *DDD* indicate lighter posts set between the larger ones. *EEE* show the wires for supporting the trees *G*, and *FF* is the ground line.

Let us glance briefly at each of the items of this much-in-little system.

The stumps *A* should be 1 yard long or thereabouts, pickled or well dressed with creosote. They should be at least 4 inches in diameter, and must be driven into the ground at a slight angle. Holes must not be dug for them, as, however well the soil may be rammed in afterwards, the stumps will not hold. They may be set about 5 feet behind *C*.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 1.—ECONOMISING SPACE IN FRUIT CULTURE.

- A, stumps.
 B, supporting wires.
 C, stout posts set at a slight angle.
 D, lighter posts (vertical).
 E, galvanised wire for support-
 ing trees.
 F, soil level.
 G, trees trained diagonally.

The wires *B* should be strong, at least $\frac{1}{4}$ inch in diameter; strand wire (say 7-strand) is best.

The uprights *C* should be about 8 feet long, of which 2 feet must be driven into the ground. They must be set at a slight angle, like the stumps. It is an advantage if they are "shoed" at the base, and a strut taken from the tip of the "shoe" to the post above ground. The connecting wires *B* should be attached to the stumps before the latter are driven into the ground, and made quite secure by means of staples (which cost about 2d. per lb.). The upper part of the wire may then be bent round the uprights and drawn tight by means of a special tool, which can be hired or borrowed from the ironmonger who supplies the wire.

When stumps and principal uprights have thus been made secure, the intermediary uprights *D* may be driven into the ground. There should be one at every 6 yards at least. Hop poles about 2 inches in diameter answer for these, and the base at all events must be creosoted.

The wires may now be stretched. Five-strand wire, $\frac{1}{4}$ inch or so in diameter, will be suitable, and it should be well galvanised. Attach at one end and make secure with staples driven well home; then strain tight at the opposite end. Care should be exercised in uncoiling the wire, otherwise ugly kinks may be caused, and the work will look slovenly.

Except for the sake of appearances, it is not necessary that the wires should be as taut as fiddle strings. If tight enough to "sing" a little when drawn laterally and released, all practical purposes will be served. It is important to tighten up the wires by degrees, beginning with the intermediate ones. If the top or bottom one is put on first and strained tight, it will loosen when the next one is put on and similarly tightened.

In districts where it is difficult to get posts of a suitable character, recourse may be had to metal uprights to take the place of *C* and *D*. The first cost will be greater, but the framework will of course be more lasting.

In planting the trees it is a very good plan to proceed as follows: Begin at one end and make a trench about 18 inches wide and 1 foot deep, throwing the soil into a ridge along the edge of the trench. Having arrived at the other end, turn, and dig over the subsoil, shifting it another foot deep, not merely scratching it over. Spread on the subsoil before turning it one of the following mixtures:—

A

1 oz. of muriate of potash,
2 oz. of basic slag,
per yard run.

B

$1\frac{1}{2}$ oz. of kainit,
 $1\frac{1}{2}$ oz. of superphosphate,
per yard run.

In the absence of these fertilisers, road scrapings, burnt refuse, mortar rubbish, or well-decayed manure may be dug in. All are good; but I deprecate large quantities of rich, rank dung, because it will tend to entice the roots downwards, and foster an exuberant, unfruitful growth, rendering speedy relifting or root pruning absolutely necessary.

Having thus prepared the trenches, the trees may be selected. Many do this first; but if the trenches are made well in advance of planting it is an advantage, as the lower soil becomes weathered and sweetened. The trees should be of the upright cordon class, and the price will vary from 1s. to 2s. 6d. each, according to age and variety. Trees three to four years old are the best. They may be bought already furnished with fruit spurs, and with a web of fibrous roots.

The loosening of the subsoil will have partially filled up the trench, and a layer of the surface soil may now be shovelled in, reducing the depth of

the trench to 6 or 8 inches, which will be quite suitable. Place the trees in the trench about 2 feet apart after cutting any of the prong roots which may have been broken smoothly across; arrange them at an angle of about 45° , and shovel soil over the roots, working it carefully in amongst the fibres. Tread gently, but firmly, and spread over all a coating of well-decayed manure, subsequently covering this with the remainder of the soil.

By following this system, there can be scarcely a doubt about the trees taking kindly to the soil. They will bear some fruit the first season, even though very little. It is no disadvantage to have a light crop the first year of planting; on the contrary, it should be viewed with satisfaction, because there is then no danger of the trees suffering from an over heavy burden.

The whole of the work indicated, from the erection of the framework to the planting of the trees, may be done in autumn, in winter, or in early spring. Midwinter is not a very good time, because the posts and trees have not a good chance of becoming bedded to their positions in the soil, owing to the changes brought about by rain and frost.

Apples and Pears are admirably adapted to this method of culture, and by selecting sorts with care (see a subsequent chapter) and pruning judiciously (also to be treated later) a long succession of fruit can be had. True, each tree will only yield a limited quantity, but it will be of large size and splendid quality.

Plums are not quite so well suited, as they are naturally of much more vigorous growth than Apples and Pears, and not nearly so amenable to the restrictive system of pruning. I prefer to grow them as pyramids or standards.

Gooseberries and Red Currants may be grown with great success on the cordon principle, and it may be practised unhesitatingly with the former where a good many varieties are wanted for dessert or exhibition.

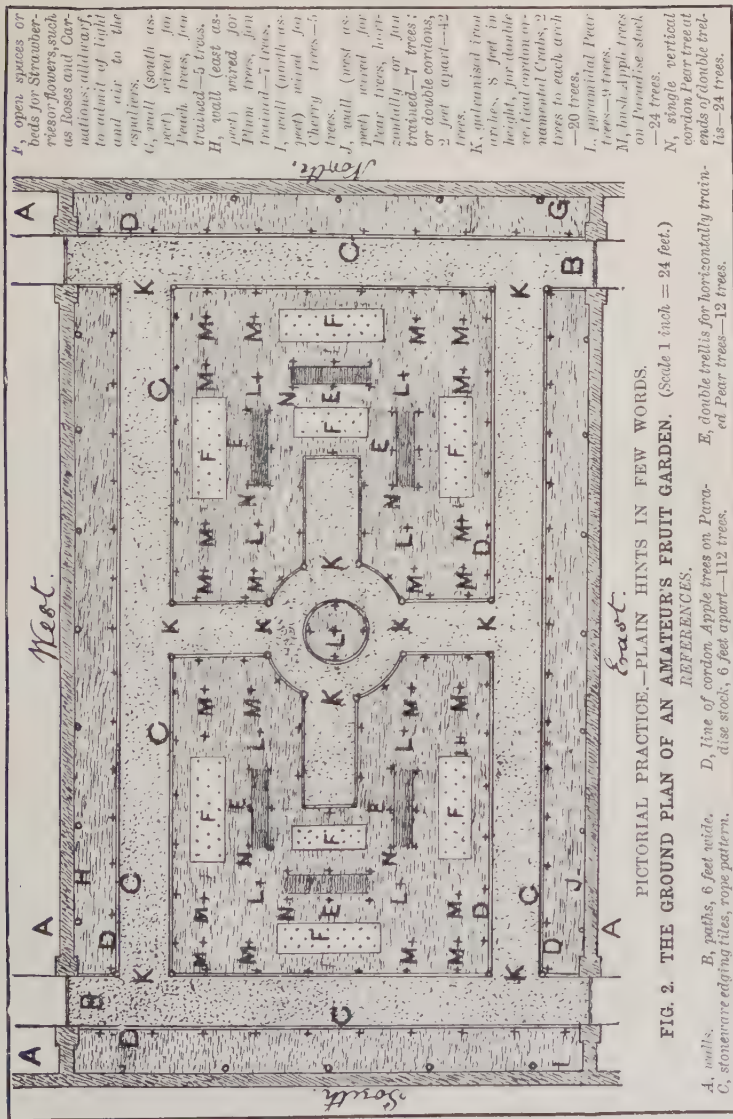
It is important to utter a warning that the system herein described is not suitable for market work. The cultivator who grows fruit for profit will want large quantities of a limited number of chosen sorts, not one or two trees of a great many varieties. (See "Apples for Profit," p. 54.)

The full advantages of the system are only manifest to the private grower. To the latter it means the ability to grow a great many varieties on a very small strip of ground, without the aid of a fence or wall. By choosing varieties which ripen in succession he will not have a good deal of fruit ready at the same time, but will have a long and continuous supply. He can have both Apples and Pears, in fact, from July to April, and of the former a few of the best keepers may last until the next crop is ready.

It may be desirable in some cases to establish more than one of these frameworks on the same plot of ground. Any number may be so provided if a space of about 4 feet is allowed from one to the other. This distance will permit of plenty of sunlight getting to the trees, of a free circulation of air, of space for pruning, and of freedom of movement in surface culture. It will also allow of the roots spreading without one row robbing another.

By no other means can space be so closely and well cropped with the larger kinds of fruit in gardens where walls or suitable fences do not exist.

Where there is more space at disposal, and a desire exists for a complete fruit garden, an interesting and valuable adjunct to a home may be established. Fig. 2 (see page 5) shows the ground plan of an amateur's fruit garden, arranged with a due regard to the various interests involved, such as the inclusion of the principal kinds, suitability of site and aspect, and the welfare of other occupants of the garden.



Chapter II.—The Best Forms of Tree.

IN pursuance of our determination to make the most of limited space, and to have a long supply of splendid fruit even if the garden be small, let us glance at the various forms of fruit tree that may be called into requisition.

The skilled trainer in the nursery takes a fruit stock in summer, inserts an Apple, or Pear, or Plum bud in the main stem of it, very much as a rosarian puts buds in the shoots of a standard Brier, and the following spring cuts off the head of the stock, leaving only a stump to support the shoot into which the bud is fast developing. In the autumn he removes the stump, leaving the Apple, or Pear, or Plum in complete possession.

By the time another year has passed the young fruit tree has been headed hard back, and has pushed a number of side shoots, which the aforesaid trainer proceeds to work into various shapes. From the "maiden" tree evolved by the budding process he will make you a bush, a pyramid, a cordon, an espalier, a palmette verrier, a fan, a "gridiron," or any other of the many shapes into which fruit trees are trained.

Digressing for a moment, it may be well to answer an imaginary question as to whether the average amateur fruit grower can cultivate and bud his own fruit stocks. He can, certainly; but I do not think he would find it economical. The various stocks employed, such as Paradise (different sorts) for Apples, Quince for Pears, Mussel and Brompton for Plums, Mahaleb for Cherries, and so forth, are not in retail commerce. It is easy to get them in thousands for trade purposes, but not so easy to procure them in dozens for private gardens. Moreover, fruit trees are now so cheap that if the time devoted to cultivating and budding stocks in the home garden is taken into account, as it ought to be in order to arrive at a proper basis of calculation, nothing whatever is saved by doing the work privately.

Another question: Does it pay to raise fruit trees from seed or cuttings? At the risk of conveying disappointment to the large number of gardening novices who love to save pips from the Apples which they eat, sow them, and then worry experts for opinions on the merit of the resulting fruit (if any ever does result), I must express an opinion that seedling fruit culture is a delusion and a snare. I have had hundreds of fruits submitted to me by proud raisers, but I have never yet seen a promising novelty; and my diplomatic resources have been taxed to the utmost in order to soften the blow of an adverse opinion. The seedlings may be used for grafting with reliable sorts, but, of course, the average novice is not satisfied with that. He wanted to raise something that would put Lane's Prince Albert Apple, or Cox's Orange Pippin, into the shade, and he is an injured and a disappointed man. As for raising fruit trees from cuttings—well! if you want to amuse yourself for several years by watching trees grow and grow, and produce little or nothing except magnificent crops of leaves, go in for the cuttings system; if you want a quick crop of fine fruit, leave the amusement to your neighbour. You will be able to make him presents of large, richly coloured fruit, and he will be able to return the compliment with beautiful branches.

Reverting to the different forms of fruit trees, we have bushes, pyramids, and standards for open quarters; and cordons, espaliers, fans, etc., for walls, fences, and wire supports.

REFERENCES.

A: *a*, a maiden tree (one year old from the bud or graft); *b*, growths as they would push from an unpruned tree in the second year; *c*, point of pruning or "heading" to secure growths for forming the head of the tree.

B: the tree in the first year's training or that following the "heading"; all the growths being removed but three of the best situated and most promising: *d*, stock; *e*, steep portion of bud-diel or grafted variety; *f*, standard growths forming the basis of head; *g*, joints of winter-pruning.

C: the tree in the second year of training; *h*, sturdy growths; two from each branch; *i*, spur, not to be pinched; *j*, shoot stopped at first leaf and lateral pinched at first leaf.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 3.—FORMING A BUSH FRUIT TREE.

Bush Trees.—The bush system is admirably suited for Apples on the Paradise, Pears on the Quince, Cherries on the Mahaleb, and Plums on the Mussel. Selections of varieties of all these, adapted to different soils and situations, will be given later. For the present, let it suffice to give a little attention to the tree. A bush Apple is procured by cutting down a maiden tree about two-thirds of its length, leaving six or eight buds, which break into growth, giving a leader and side branches. Such a specimen may be bought from a nursery as a two year old. The shoots should be thinned to three or four and cut hard back when growth starts. In a year's time this tree will have six or eight branches, and with one more shortening its form will be thoroughly established (Fig. 3, page 7). It will be a well-branched, well-formed tree, with clean, healthy growths and fruit spurs already forming freely. The subsequent pruning will be dealt with later on, but it may here be said that these trees may be planted 8 feet apart, and there need be no difficulty in keeping them within bounds and in full fruitfulness for many years.

Pyramids.—Trees of formal shape are often wanted by the side of garden walks. They are not more fruitful than bushes, given equally skilled attention for both, and they take a little more time to shape, but there is unquestionably a considerable demand for them. Pears on the Quince stock are more suitable for pyramids than any other class of tree, although Plums and, indeed, Apples and Cherries also, are so grown. Where space only permits of a few pyramids being planted, I advise Pears being chosen, with, perhaps, a couple of Plums.

A pyramid is formed in the first place by shortening a maiden tree as before described, but in the second year a more regular disposition of the branches is aimed at when a choice is made, and the upper side shoots are shortened more severely than the lower ones. A complete illustration of the procedure is seen in Fig. 4, page 9.

Cordons.—This type of tree emanated from France, and the name is simply a fanciful application of the French word *cordon*—a string or bell-rope—in allusion, presumably, to the fact that the tree is pruned in to a single stem, on which fruit hangs like a rope of Onions. We have several forms of cordon trees, *e.g.* single and double upright, and single and double horizontal; but in all the main principle is the same, namely, to restrict the tree to a formal shape and prevent its developing branches.

I have already shown how valuable the cordon system is where space is very scarce. It is so easy to err in forming cordons out of maiden trees that I am inclined to advise purchasing developed trees of three years old or upward. Several nurserymen make a speciality of them. It may be established with advantage as a general rule in managing cordons that as long a run as possible should be given to the head, with a view to providing a counterpoise to the severe restriction of the side growths. If a cordon tree is curtailed as to its leading shoot as well as to its side branches, it will dwindle and become unhealthy. This is particularly the case with horizontal cordons, which are useful for forming a low line of trees at the side of walks, in gardens where there is not room enough for the taller espaliers. Prune the side shoots both in summer and winter, at the former season to six good, well-developed, healthy leaves; at the latter season to within one or two buds of the main stem; but at all times and seasons give the leading shoot the utmost extension possible. In the case of low supports, a greater length of run may be secured by training upright trees diagonally.

The cordon system may be brought into play for arches, and a reference to Fig. 5, page 10, will show how the trees may be trained.

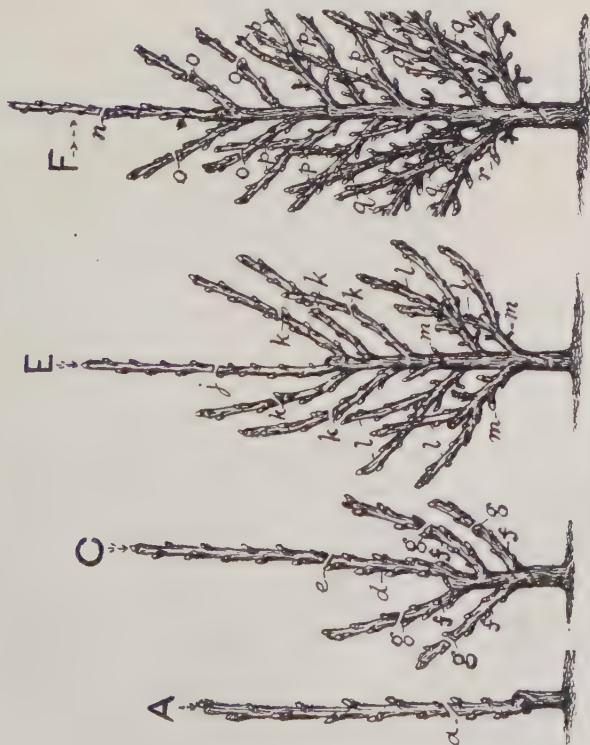
REFERENCES.

A, maiden tree; a, joint of heading, 13 inches from the ground.

C shows the tree A a year afterwards; d, leader; e, joint of heading 15 inches from base; f, side shoots thus originated and forming first tier; g, point of shortening side shoots 9 inches from base.

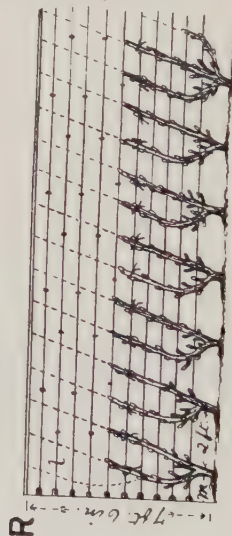
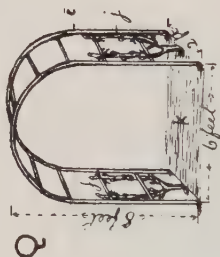
E, pyramid in third year; j, where to shorten the leader; k, second tier side shoots shortened to 6 inches; l, first tier, not to be shortened; m, spurs.

F, tree in fourth year; n, leader shortened to 12 inches; o, third tier shortened to 6 inches; p, second tier not shortened; q, first tier not shortened; r, spurs.



PICTORIAL PRACTICE—PLAIN HINTS IN FEW WORDS.

FIG. 4.—HOW TO FORM A PYRAMID.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 5.—TRELLISES SHOWING HORIZONTAL AND UPRIGHT CORDONS AND ESPALIERS.

REFERENCES.

- Q, double horizontal cordon; a, end stay and stay of trellis; b, upright post or standard, always between two trees; c, wire for securing cordons; d, stone or wire edging to the walk; e, three years old double horizontal cordon Apple tree. (See ground plan at D, page 5.)
 R, double trellis for training Pear trees; f, trellis; g, espalier or horizontally trained three years old trees; h,

single vertical cordon trees. (See ground plan at E, page 5.)
 Q, arch for training instrumental
 Crab Apples; f, trellis; g, double vertical cordon trees; h, wall wired for ground plan at K, page 5.)
 R, wall wired for trees, either horizontal fan, or cordon trellis; f, trellis; g, double vertical cordon Pear trees —three years old. (See ground plan at J, page 5.)



PICTORIAL PRACTICE. —PLAIN HINTS IN FEW WORDS.

FIG. 6.- FORMING A FAN-SHAPED FRUIT TREE.

REFERENCE.

A, tree in last year's training; a, point of heading back a tree; b, three months' original and retained to form the base of the trunk; c, points of winter pruning; d, base

pruned trellis of stakes to secure growths against wind and give desired direction. B, tree in second year's training; e, growths retained and trained obliquely; f, spurs.

Espaliers.—Here we have another formal type of tree, secured by the skilful manipulation of the yearling. A maiden tree may be cut hard back. If possible, it should be headed to a point where there are three buds not far apart, one of them on the front of the main stem. A front bud gives a shoot which goes up in a truer line with the lower portion of what is to be the main stem than a side bud. One of the three buds is to continue the leader, and the other two are to form the lower pair of side branches. If one of these extends at the expense of the other, which is weak, endeavour to redress the balance by depressing the stronger (depression checks the flow of sap and steadies the growth) and raising the weaker. When the leader has extended about 1 foot it may be stopped again, if possible, at a point where three buds cluster near each other, and material for another tier of branches thus secured. In good soil a pair of tiers may be secured in one season. I have known more under very favourable circumstances.

It is not advisable to tie the side shoots down to the horizontal position which they are to assume ultimately (see *g* in Fig. 5, page 10) while they are in an early stage of development; it will suffice to do that in the winter following their formation, or even in the second year. Under ordinary circumstances, an espalier tree with five or six tiers of branches 10 inches to 1 foot apart is large enough for most gardens. On a wall, an espalier may be trained with twenty or more tiers; it is merely a question of space.

The side branches may be summer and winter pruned, the same as cordons.

Fan Trees.—The fan system is well suited to Peaches and Nectarines, to Apricots, and to Morello Cherries. If anyone has a wall with a north aspect, and is not quite sure what fruit he would like to grow on it, let him plant a fan-shaped Morello, permit it to grow freely, and lay in plenty of young wood. He will get abundance of very useful fruit.

A fan shaped tree proper has no vertical leading shoot. All the growths radiate from a point low down in the tree as a result of hard cutting back. A maiden tree is chosen, cut down two-thirds its length, and three shoots selected from the buds that break, the others being removed while still quite small. When starting into growth the following spring, these three shoots may be shortened to 6 inches. As a result, buds will break into growth, and two may be selected on each of the three stumps, and allowed to extend diagonally and equidistant. Thus a tree with six healthy branches will be secured, all radiating from a common base or centre—a veritable “fan” (see Fig. 6, page 11).

It may be well to warn the inexperienced fruit grower against rushing his trees into size by omitting the cutting back of the three branches. The temptation to do so is very strong in the case of Peaches and Plums, for they make a great deal of growth when young, and it seems a pity to cut most of it away. Nevertheless the grower should harden his heart, sharpen his knife, and follow the advice here given.

Standards.—This class of tree is not suitable for small gardens, but in orchards, where the trees are wanted to give large quantities of fruit, and they can be given a space between each pair of 20 or 30 feet, they are good. Standards and half-standards, the former on clean stems 6 feet, and the latter 3 feet, in height, of Apples, Plums, and Cherries are still being planted extensively in Kent, also in the Midlands and the West. In forming young trees, it is wise to shorten the shoots two-thirds their length the first season, and one-third the second season; then a tree with a good foundation is secured (see Fig. 7, page 13).

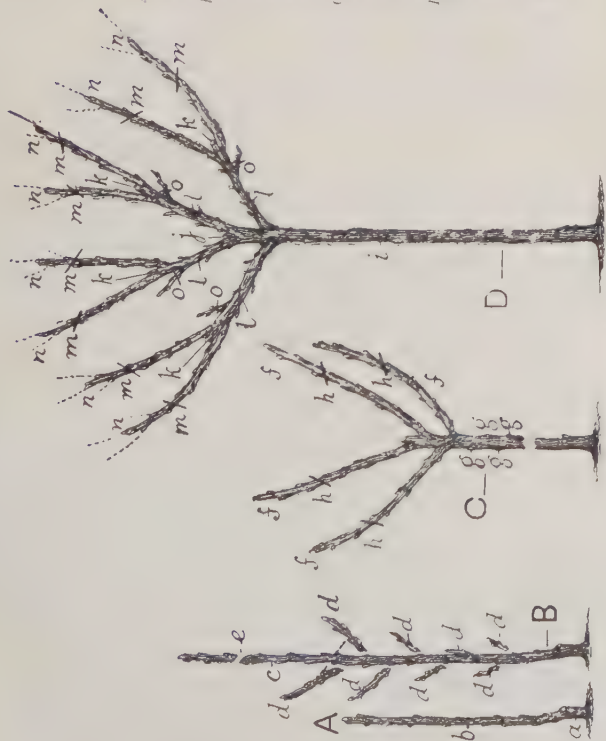
REFERENCES.

A, a yearling or maiden Apple tree which has not branched, but has good buds all along the stem; a, shoot; b, growth from bud inserted in previous year.

B, a two years old Apple tree; c, continuation of growth from terminal bud of preceding year's stem; d, laterals or side shoots from previous season's stem; e, shortening point of leading growth, called "heading," at desired height of stem, the side shoots being cut off close to the stem to throw all the vigor of the tree into the uppermost buds.

C, head of three years old Apple tree; f, shoots retained to form head; g, points at which growths have been rubbed off; h, points at first winter pruning to cause branches to force and push buds below for branching spurs.

D, four years old standard Apple tree; i, stem; j, point of "heading"; k, places at first winter pruning; l, branches or limbs with spurs (short stubby growths, terminated by a bud and smaller side buds); m, points of second winter pruning if leading shoots of year long; n, non-shooting of leading shoots if not long, as then naturally fork as indicated by dotted lines; o, side shoots to be cut to leave only buds of bud to form spurs.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 7.—HOW TO FORM STANDARDS.

Chapter III.—The A B C of Pruning.

YOU may make a great mystery of pruning if you like; or you may make it as plain as the alphabet—it is all a question of character. There are students of chemistry, albeit of the elementary class, in whose eyes carbonic acid gas, most commonplace of compounds, becomes invested with a deep and inscrutable fascination when referred to as CO_2 , and to those of a like order of mind the development of pruning into a great, weird mystery, only to be approached through a tangle of technicalities, is a satisfying and grateful business.

It is not for me to debar these gentlemen from the enjoyment of a whirl of phrases and formulæ, but on the other hand I am not called upon to provide them with their special intellectual pabulum. The idea I have before me in the present notes is to reduce pruning to its simplest elements, in order that the most inexperienced person may read, instantly get to work, and in due season reap a full harvest of fruit.

A great help to a practical grasp of the A B C of pruning is a supply of shoots of the various kinds of fruit trees to be operated upon. By referring to these while printed instructions are being read, each point can be mastered. The differences between them are considerable. In an Apple tree the shoots are usually brown, relatively thick and plump, the fruit buds round and grey in colour. The latter are often found on the long shoots, as well as on the cluster of very short shoots and buds which is technically termed a spur. In a Pear the shoots are usually smaller and darker in colour; while the fruit buds, which are smaller and more pointed than those of Apples, are produced almost exclusively on spurs, very rarely on young wood. Plums and Damsons are also spur, not young wood, bearers. When Plum trees are young they often produce a great deal of strong wood, but when they have settled down and become well furnished with spurs the summer growths are usually much smaller even than those of Pears. They are very dark in colour, and the fruit buds small and pointed. Cherries, like Plums, are apt to be gross at first, and even when they have settled down to the serious business of life it is common for them to produce a good deal of breastwood. This is grey in colour, studded with bold brown buds, some of which are fruit buds. The spurs are simply clusters of fat, rounded brown buds. The popular "Heart" Cherries, indeed nearly all with the exception of the Morello, are principally spur bearers, but dislike much pruning. Peaches (with Nectarines) resemble their cousins the Plums in producing a good deal of strong wood when young. When they have been cured of this vicious habit by being lifted they assume a more modest habit of growth, and annually produce a crop of young shoots 15 to 18 inches long, on which the fruit is borne. Apricots bear for the most part on spurs.

A consideration of the foregoing brings the following facts into prominence:—

1. Established trees of Apples must not necessarily be denuded of their young wood, like Pears.
2. Pears must not become smothered with young wood.
3. Plums should be lifted to check over-vigorous root action when young and afterwards spurred.



REFERENCES.

[A great deal of the work of pruning may be done in summer, with great advantage; therefore in this and some other cases the shoots figured are shown in leaf.]

A, growth from a side branch; a, continuation or extension shoot; b, side shoots; c, stubby side shoot; d, spurs. Points of stopping; e, leader to its leaves, and containing small basal ones; f, side shoots to three and containing small basal leaves.

B, spur; g, previous year's wood; h, leaves disposed on a shoot stubby growth in a corner; i, prominent bud in centre, probably a blossom bud, and representative of mode of bearing in the apple generally.

C, shoot intermediate between a spur and a wood shoot; j, leaves closely set on the shoot, stubby shoot; k, conspicuous terminal bud, representing a blossom bud.

D, side shoot pruned; l, basal leaves; m, wood leaves; n, point of stopping; o, lateral pruned at first leaf; p, sublaterals pruned at first joint; q, continuation of growth, also sublaterals; r, points of stopping if the shoots are disposed to grow beyond two leaves.

Note. The earlier summer pruning is done the more trouble there is from sublaterals. The difficulty can be overcome to a great extent by pruning in August. (See page 16.)

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 8.—PRUNING AN APPLE TREE.

4. Cherries which produce their fruit buds in clusters may be spurred by summer pruning, but Morellos should have the young wood trained in.
5. Peaches and Nectarines should be lifted when young to check the root action if the growths they produce in summer are upwards of 2 feet long and $\frac{1}{2}$ inch thick or more.
6. Apricots should be spurred in the main, but a little young wood may be trained in if space permits.
7. All trees that are severely pruned to spurs should be allowed to extend a little at the head, unless they are growing on walls or fences where space is limited.

These rules may help us on the road, but details will be wanted before we can claim to have mastered the subject.

Apples.—In some respects the Apple is the most difficult of all trees to prune. Not only are the varieties very numerous, but they differ greatly in habit of growth and method of fruiting. Sorts like Bramley's Seedling and Blenheim Orange make strong, upright growth, and hard pruning is bad for them, as it leads to a great mass of shoots being formed. They should be lifted two years after planting to check root action, and the heads kept open by cutting shoots that crowd the head clean out. They will then grow into large trees and bear heavy crops, although it will be a long time before they yield much. This type of Apple tree should not be shortened severely when young; the tips of the shoots should be removed and the flowers picked off the first season after planting to give them a start.

A second class of tree is that which has a tendency to form a great many fruit buds when young, to fruit freely when quite small, and thus to grow slowly. Stirling Castle, Bismarck, Potts's Seedling, and Manks's Codlin may be named as examples. If small trees are wanted, well and good; but if the trees are required to grow into a good size, do not let them bear any fruit the first season, and a maximum of 7 lb. each the second; then they will make growth.

The majority of Apples do best in the open under the following treatment: Secure in each bush or standard, by the means indicated in my last chapter, from six to twelve main branches, growing upwards and outwards, so that at 1 yard from its base each shoot is at least 9 inches from its neighbours, and at 2 yards 18 inches. After the second year of possession, do not head these shoots hard back; merely remove a few inches of the tips. About the middle of August go over the trees and shorten the side shoots ("breastwood") on the main branches to five or six good leaves, and in the winter cut them back to two or three buds. A large crop of fine fruit is a certainty on this system, if other things are right (Fig. 8, page 15). Some of the finest Apple trees I have ever seen are those growing at Hatfield, and Lord Salisbury's head gardener summed them up well as "twelve cordons on each tree." Every main branch is roped with splendid fruit like a trained cordon on a wall.

There are a few Apples, of which Lady Sudeley may be quoted as an example, which bear on the tips of the young wood; with these a good supply of breastwood should be allowed.

Apricots.—An Apricot tree which has been shortened as a yearling, and trained into the shape of a fan in the same way as a Peach tree, is very easy to manage. It will produce three classes of growth: (1) Extension shoots, which may be laid in between the principal "ribs" of the fan if

REFERENCES.

A, extension branch; a, continuation shoot, not to be stopped in case of the tree extending, but now trained in full length; b, side shoot, also to be trained in full length for furnishing the spurs, thus forming other apices at b, and in due course branches; c, short side shoot, not to be stopped where spurs permit of extending it without overreaching, but must be stopped if the wood is thick (see D); d, short, stubby semi-spur growth to be left intact.

E, spur of one year's growth, with buds, mostly blossoms, in axils of leaves.
 F, stubby side shoot, showing buds at bases of leaves.
 G, stopped shoot; e, first pinching at third leaf; f, second pinching to one leaf, and subsequently as pointed; g, point of winter pruning.

Note.—The lateral growths are too supple or not sufficiently ripened to bare for bearing fruit, hence pinched shoots must be shortened to firm wood.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 9.—PRUNING THE APRICOT.

there is room, and the side breaks from them summer pruned to encourage the formation of spurs; (2) stubby growths, 4 to 6 inches long, which may be left intact for the lower part to plump up fruit buds; and (3) true spurs, *i.e.* stumps of growth each containing fruit and wood buds. Apricots are usually grown on walls, and practically all the knife work that is called for on established trees is the removal of "foreright" shoots, which, extending from buds on the front of the branches, stick out at right angles to the wall and get in the way. (For summer pruning see Fig. 9, page 17.)

Cherries.—Every Kentish Cherry grower will tell you that the Cherry does not like the knife. In the large orchards of the eastern portion of the Hop county the Cherries are rarely, if ever, pruned; and it is generally considered wise to shape the heads when the trees are young, and then leave them alone. The common result of the free "knifing" of Cherries is an exudation of gum. I have known old trees pruned in winter, and gum begin to exude the day after cutting. In garden culture a certain amount of pruning is necessary to keep trees in shape and within bounds, and Cherries may have to come under the knife. As far as possible the work should be done in summer, because when the trees are full of sap there is much less liability to gumming than when the sap is down during the winter season. It may be asked. Can the requisite pruning be done in summer? In the main, yes; and if the small amount of later pruning that may be necessary is done in October, before all the sap has left the trees, there is not likely to be much trouble from gumming.

Fruiting spurs will form on the wood of Cherries much more quickly than on that of Pears. Thus they may often be found on the older part of an extension branch, such as *B* in Fig. 10 (see page 19); and they may be induced to form still more freely on such a branch by stopping shoots such as *g* to five or six leaves in summer, and shortening them to two or three buds in October. Spurs are shown at further stages of development in *C* and *D*. Single fruit buds often form on one year old wood as shown in *A*. When a tree has become well furnished with fruiting spurs as a result of careful treatment, winter, or rather autumn, pruning is likely to do more harm than good, and had better be left alone. The trees will bear well if the branches are thinly disposed.

If young Cherries form very coarse shoots and no fruit buds, lift them and replant them. It will check the exuberance.

If it were not that tidiness has to be considered, I should be disposed to say, Never cut Morellos after once the framework of the tree has been secured by early shortening. The more breastwood they are allowed to make the more fruit they bear. Such half-wild trees are wonderfully beautiful, too, when in full bloom, but they look woefully bad when leafless. Careful cultivators who are fond of neatness will lay young shoots in from 4 to 6 inches apart between the main branches like Peach shoots, and there secure them with shreds and nails.

Pears are comparatively easy to prune, for they do not present the great variations which have been noted as occurring in Apples. The twelve-cordons-on-a-tree type—*i.e.* specimens with a limited number of branches trained well apart, the breastwood pruned to six leaves in August, and spurred to a couple of eyes in winter, or before growth starts in spring—is the most healthy and productive.

N.B.—In pruning Pears—and, indeed, all classes of fruit—avoid leaving stumps or "snags." A "snag" is the portion of shoot, ranging in length from $\frac{1}{2}$ inch to 2 inches, which many pruners leave on each piece of growth

REFERENCES.

one year shoot: a, basal buds (almost always wood buds); b, wood buds (relatively thin and long); c, terminal bud (generally a wood bud); d, blossom buds (thick, short, and rounded).

E, wood from which have been produced in last season's portion of extension branch; f, part of two years old natural spurs (short, stubby shoots, terminated by a cluster of buds, mostly blossom buds with one or more wood buds to continue the extension and multiplication of the spur or spurs in subsequent years); g, side shoot shortened to three buds to form a spur; h, side shoots trained in, or allowed to remain, for furnishing the tree with subsidiary branches (if not required, they should be shortened to three buds of the base, as indicated by cross lines); i, extension growth to be trained in or left full length in the case of trees extending.

G, result of shortening a side shoot to three buds at the previous winter pruning; j, spurs; k, shoot which has been stopped at fifth leaf in previous summer, and at this (the winter) pruning shortened to three buds.

D, a two years old spur with three branches; l, spurs.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 10.—PRUNING THE SWEET CHERRY.

which they cut. Such stumps are a source of danger to the tree, as they inevitably decay. The cuts should be made with a sharp knife close to the bud, then no "snag" is left. (See Fig. 11, page 21, and Fig. 12, page 22.)

Peaches and Nectarines.—Bearing, as these fruits do, mainly on the young wood, summer pruning and subsequent spurring, so important with most fruits, are out of place. It is true that when they are grown in pots, under conditions which do not permit of space for free extension, spurs may be encouraged to develop, but that is a phase of culture which must be left for the present. We have seen already that the best form of tree is the fan, and that the way in which it is formed is to cut back the "maiden," and to again shorten the branches hard at the two year old stage. This results in a number of shoots which form the "ribs" of the fan, and between them are laid the young shoots that are to bear the fruit. Theoretically the system is easy enough, and there is no reason why it should not work out in practice. It is probable that the principal difficulties of the novice are (1) the shoots ("forerights") that stick out at right angles to the trellis from the face of the main shoots, and (2) how to reconcile the interests of removing the old wood after fruiting with that of retaining enough young extension wood for the next year's crop, since a great part of this pushes from the upper part of the fruiting shoot. These difficulties can easily be smoothed away. (1) Forerights cannot be neatly laid in, and should be cut clean out. (2) When the shoot which is to bear is disbudded in the spring, a bud should be left at the base as well as at the tip. The latter will serve a good purpose in drawing up the sap, but there need be no hesitation in parting with it when the time comes to cut out the old fruiting shoot, because the basal bud left has broken into growth, and there is an extension shoot all ready to take the place of the one removed. (See Fig. 13, *c*, page 23.)

In disbudding a fruiting shoot when growth starts in spring, do it by degrees; it imparts too great a check to remove all the buds at once (Fig. 14, page 25). With respect to the time for removing the old fruiting shoots, an opportunity may be chosen any time after the fruit has been gathered.

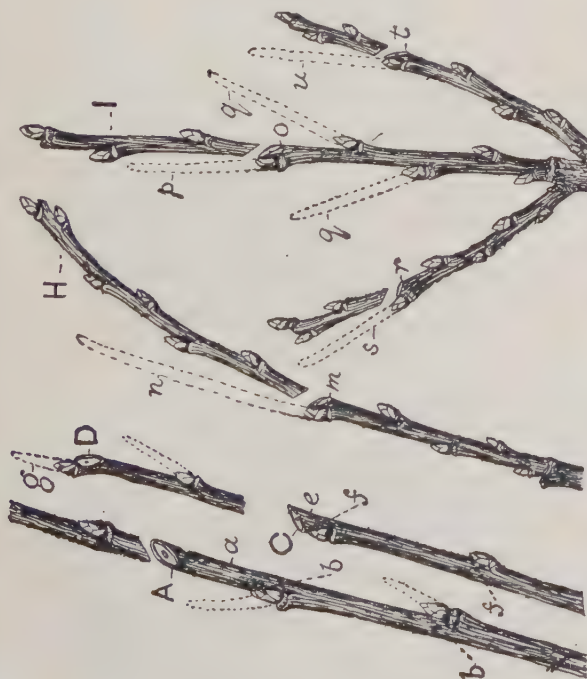
Plums.—Like one or two other fruits, Plums produce growths intermediate between extension shoots and spurs, termed, from want of a better name, stubs. Anyone who examines an established tree is likely to find three distinct classes of growth, the first being extension shoots, the second stubs, and the third spurs. Extension or growth shoots, usually quite destitute of fruit buds, or at the most having one or two, are more prominent in young than in old trees. When the grower is making a start with young Plum trees he has plenty of shoots under his eye; in fact, the chances are that he sees a good deal too many, for the Plum is a gross tree. The remedy for excessive vigour is root pruning, which will be dealt with in a subsequent chapter. For the moment it will suffice to deal with the branches.

The exact method of dealing with growth shoots, like *A* in Fig. 15, page 26, depends on circumstances. If the tree is well furnished with them, they should be left untouched, and will then merely extend at the tip; but if the tree is quite young and unfurnished, they may be shortened so as to cause others to break. When a tree is well furnished with growths similar to *B*, much cutting back is a mistake, for it only multiplies shoots to such an

(Continued on page 24.)

REFERENCES.

- A, shoot cut in advance of the bud, leaving a snag, a: a, proper direction of cuts.
 C, cut made on same side as bud, leaving a short snag, e: f, proper direction and place.
 D, cut made partly below the bud, g, resulting shoot; not good.
 H, oblique shoot shortened to top side bud, m, to secure a straight branch, n.
 I, top of pyramid; o, tender shortened; p, new leader; q, side shoots; r, side shoot shortened to outside bud, right; t, shoot shortened to inside bud, wrong; s, u, resulting shoots.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS
 FIG. 11.—WHERE TO MAKE THE CUTS IN PRUNING.

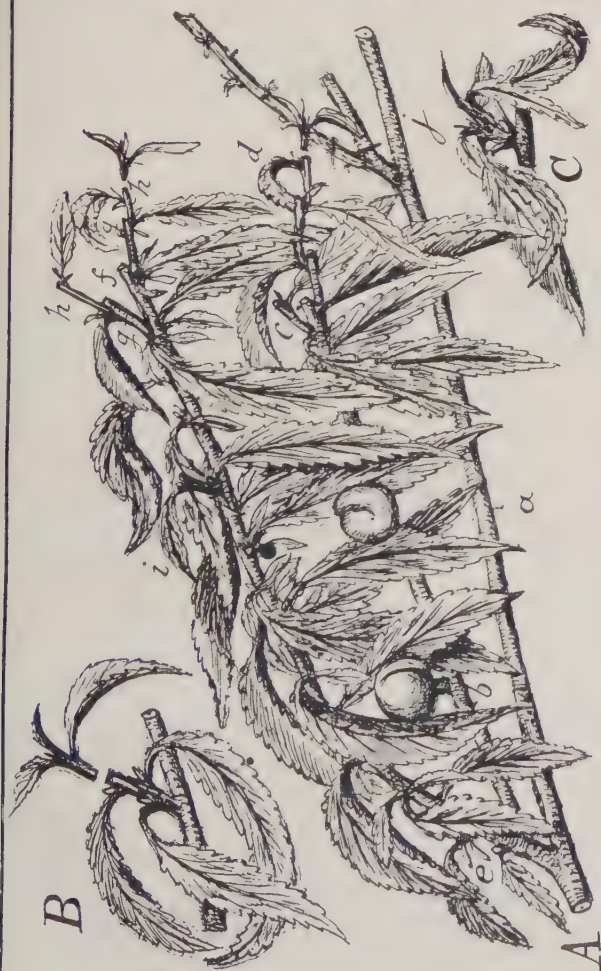


REFERENCES.

- A, portion of an extending branch; a, continuation or extension shoot, to be trained in its full length in the case of a tree extending on an espalier or wall; b, side shoots to be laid in (in the case of a free-trained tree) if required, for furnishing the spur properly with branches, otherwise they should be pinched to three good leaves (not counting basal ones) to form spurs (see C); c, short shoot terminated by a leaf, somewhat rounded bud, not to be stopped; d, natural spurs—short, stubby growths, terminated by a crown of leaves and with a prominent central bud in the centre of each—usually a blossom bud; e, natural spur; f, previous year's wood; g, current year's growth; h, central bud from which fruit is produced in the year; i, shoot (such as b in A) pinched to form spurs; j, previous year's wood; k, small basal leaves; l, good characteristic leaves; m, point of stopping the shoot; n, lateral stopped at second joint; o, sublaterals pinched to one leaf; p, point of shortening at winter pruning. (See note on laterals, p. 15.)

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 12.—PRUNING PEARS.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 13. PRUNING THE PEACH AND NECTARINE.

REFERENCES.

of the current season, but of last year's formation; c. to mixed growth (present year) stopped at about three leaves; b. attract sap to the fruit; d. laterals and sub-

A, portion of a branch, showing, a, then, you, old road - side
or subsidiary branch; b, two new road - having road

[illegible]

P., termidant-
edical spots on
at position
growth by
sheep.
not a real
spot.

extent that the tree is greatly overcrowded, and consequently fails to bear well. There is a good natural extension shoot at *d*, and fruiting growths at *g*, while stubby shoots like *f* will, if slightly shortened, or even left intact, quickly bear.

This shoot *f* being a typical Plum growth, may be followed up to a later stage, as at *D*. It has developed into a long spur. Now such growths as these give a tree a somewhat tangled appearance when it is full of them, and many pruners with a great love of neatness might shorten them to the point indicated by the bars; but this at least may be said: A tree well furnished with them is a sure fruiter, while one without them is a very poor bearer. Cherish, therefore, in the Plum short, stubby growths which show no indication of extending into long branches, for sooner or later they will yield good fruit.

Growths like *C* are also eminently desirable. They are spurs that have formed as a natural consequence of keeping the tree open and allowing the moderate quantity of healthy wood retained to mature. Growth shoots pushing from these spurs are not likely to be very strong, and may be shortened to six good leaves in summer, and spurred back in winter.

In connection with Apples, Pears, and Plums alike—indeed, all the principal fruits—the following may be established as a leading point in pruning: That when once the framework of a tree has been formed, the treatment of extension shoots must be modified. Leading shoots need only be cut back when it is desired to originate more branches. If no more branches are wanted—if, indeed, there is a risk of getting too many—do not shorten the leaders. On the lower part of a leading shoot there are often growths which might be termed sub-leaders. Now if the leaders be shortened fresh growths will break in the immediate neighbourhood of these sub-leaders, and the consequence is that a tangle of shoots is created, which makes for barrenness rather than fruitfulness. If the leaders have to be shortened, then the sub-leaders ought to be cut close in, to prevent the overcrowding foreshadowed. The idea of pruning that prevails in many quarters is that every young extension shoot, whether it be pushing from the top or sides of the tree, and whether or not there be “sub-extensions” on the lower portion, must be cut back to a certain level. This is wrong, and frequently does great harm.

Pruning Tools.—Controversy often rages on the subject of the best tool for pruning. I have heard partisans argue on the rival claims of *sécateurs* and knife as vigorously as if they were discussing a political question. Well, the point is just as interesting as, and very much more useful than, many political topics. I confess, however, that there seems to me to be little real ground for argument: the question is largely one of circumstances. In training and pruning young trees in nurseries—trees so small that the grower has easy access to every part of them—the knife is almost universally used, and, I think, rightly, for the cleanest of cuts can be made at the exact spot where they ought to be. But when large, unwieldy trees have to be dealt with the case is wholly different, and the *sécateurs* are far more useful. I have heard it said that *sécateurs* make jagged wounds. That is a very poor compliment to the skill of the owner in sharpening and handling. When as sharp as they ought to be, and handled properly, they make beautifully clean cuts. I should like some of the gentlemen who

(Continued on page 28.)

REFERENCES.

A, young shoot and fruit torn off ;
a, wound made.
B, B, proper way.
C, leaving branch before disbud-
ding ; d, shoot for next year's fruit-
ing ; e, terminal shoot.
D, leaving branch after disbud-
ding ; b, shoot for next year's fruit-
ing ; c, the terminal shoot shown
in C, stopped ; the resulting lat-
ent, d, also stopped at one leaf.
E, branch extension after disbud-
ding ; e, side shoot for next year's
bearing ; f, continuation shoot
stopped ; g, spur stopped.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.
FIG. 14.—DISBUDDING PEACHES IN SPRING.



REFERENCES.

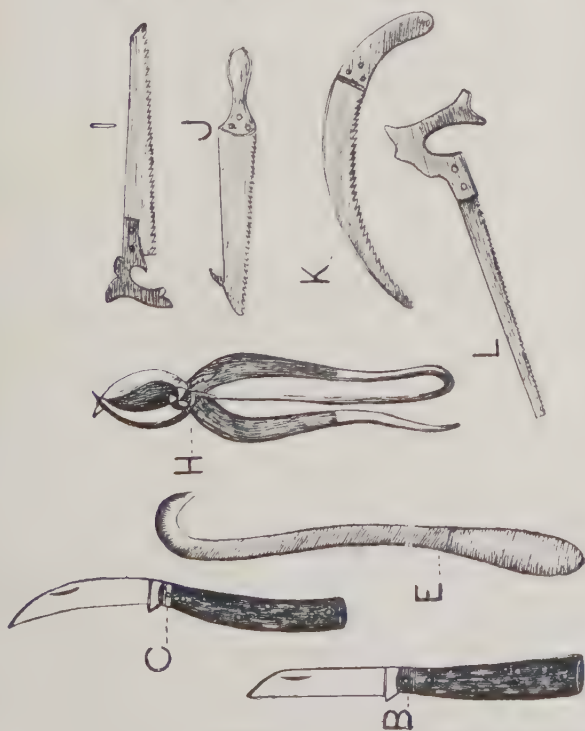
- A, one year shoot: a, blossom buds; b, wood buds; c, point of shortening to originate growths.
 B, one and two years wood: d, extension shoot left entire or shortened to originate growths; e, subsidiary shoots left entire for forming branches, or where not desired shortened to form spurs; f, short side shoot with fruit buds left entire to produce some fruit; g, very short side growths with blossom buds left intact; h, a natural spur.
 C, portion of three years wood of fruitful tree: i, points where fruit has been produced; j, spurs.
 D, part of a three years branch: k, short side growth after bearing fruit, marked for shortening to keep spurs close to branch; l, very short side shoot, marked for shortening to prevent elongated spur; m, portion of subsidiary shoot left entire, showing natural spur formation.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.
 FIG. 15.—PRUNING THE PLUM.

REFERENCES.

- B, large clasp-pointed knife with straight blade, handle slightly curved. A popular type in America, but not the best for general pruning.
- C, medium clasp-pointed knife, blade pointed and well curved, handle also curved, the best knife for general pruning.
- E, a claspless pruner, about 15 inches long, with curved, hooked, and inward cutting blade. A standard, but not indispensable.
- H, two-bladed secateurs with iron handles, a splendid tool when properly handled and kept sharp. The blades are curved and pointed, and will negotiate shoots up to $\frac{1}{2}$ inch in thickness with ease. It is not well, however, to strain them upon very thick shoots.
- I, pruning saw with thick blade and close teeth.
- J, pruning saw with hook, a handy and useful saw.
- K, American curved saw, cutting with a pull instead of a push, and even useful in dealing with crooked trees.
- L, broad-saw, handy for cutting close to branches when a deeper blade would be inconvenient, but not suitable for very large branches.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.
FIG. 16.—A SELECTION OF PRUNING TOOLS.



decry sécateurs to have to tackle some trees such as it has been my unhappy lot to have to reform—trees of considerable size, and so crowded with interlacing shoots as to make it almost impossible to penetrate them. Here the sécateurs have a tremendous pull over the knife, for the work can be done as well and in half the time. In certain positions it is difficult to sever a shoot with the knife without steadying it with the other hand; the sécateurs steady and cut at the same time.

In using pruning knives inexperienced persons frequently gash their thumbs. They have not learned the art of checking the progress of the blade directly it has got through the shoot. This is owing to their clinging fondly to the seductively curved handle. Personally, I regard the curved handle, admirable though it may be in theory, as a snare. It is all right when the pruner wants to take a sweeping pull, but not for delicate work. If the pruning novice gets his upper fingers well up the back of the blade he will not cut himself, because he has complete control of the knife.

Black Currants.—"Cut and feed" must be the watchword in these mite-ridden days. Neglected bushes have no chance at all. Cut, cut, cut; and feed, feed, feed. If the old wood is pruned away relentlessly, and at the same time the soil is manured in order to encourage the production of fresh shoots, there will be a chance for Black Currants, but not otherwise. There are cultivators who will tell you that Black Currants need not be pruned, because they are young wood bearers, and not spur bearers. These excellent people forget that wood follows the knife. It is so with large trees, and it is so with small ones. If the wood that has borne fruit is not cut out it loses its freshness, and quickly becomes hard, twiggy, and budless. Then the lean years of the bush begin, and the grower suffers. The only way to keep a Black Currant bush continuously fruitful is to induce it to form a succession of fresh shoots year after year, like a Peach (see Fig. 17, page 29).

Red and White Currants.—These may be trained and pruned very much like Gooseberries, except that when six or eight main branches are established, a rigorous spurring may be practised, and young wood prevented from extending. Most pruners do this in winter, and I am well aware that on the farms it is almost impossible to attend to the bushes at any other time, owing to the available labour being so much in demand for urgent tasks. All the same, I have proved the efficacy of summer pruning to my own complete satisfaction, and I urge it on all who can spare the time. A pair of sécateurs or a knife may be employed, and I have set a willing boy to work with a pair of strong scissors with good results. The summer pruning should consist in shortening the breastwood to about half a dozen leaves, and the winter work of spurring these in to a couple of buds (see Fig. 18, page 30).

Gooseberries.—"If you want a few fine flowers, cut hard; if you want plenty of little ones, cut lightly": thus the expert Rose grower. Very much the same advice might be given respecting Gooseberries. Those people who want a great quantity of fruit, and do not mind lacerating their hands in the gathering of it, may imitate the popular plan of letting the bushes run wild; but those who want quality as well as quantity, and deem it humiliating to have to fly to gloves in order to protect themselves from scratches while gathering, will give the bushes a little attention with the sécateurs. I could

(Continued on page 32.)

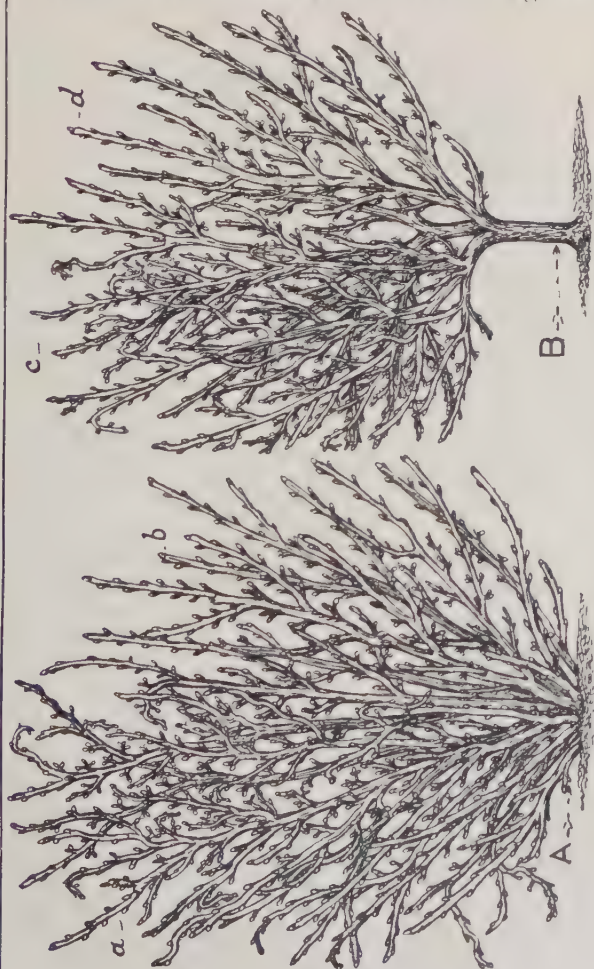
crowded, being removed then by the roots.

B, clean stemmed bush; c, side of bush before pruning; d, side of bush after pruning.

The natural bush. A is the result of inserting a cutting with all its buds. It is the most durable form.

The clean stemmed bush B is secured by removing all the buds of the cutting on the part that is inserted in the soil and also on the part above ground to a height of not less than 6 inches.

The Black Currant must not be spur-pruned, for it bears the finest fruit on the young shoots of the previous year.



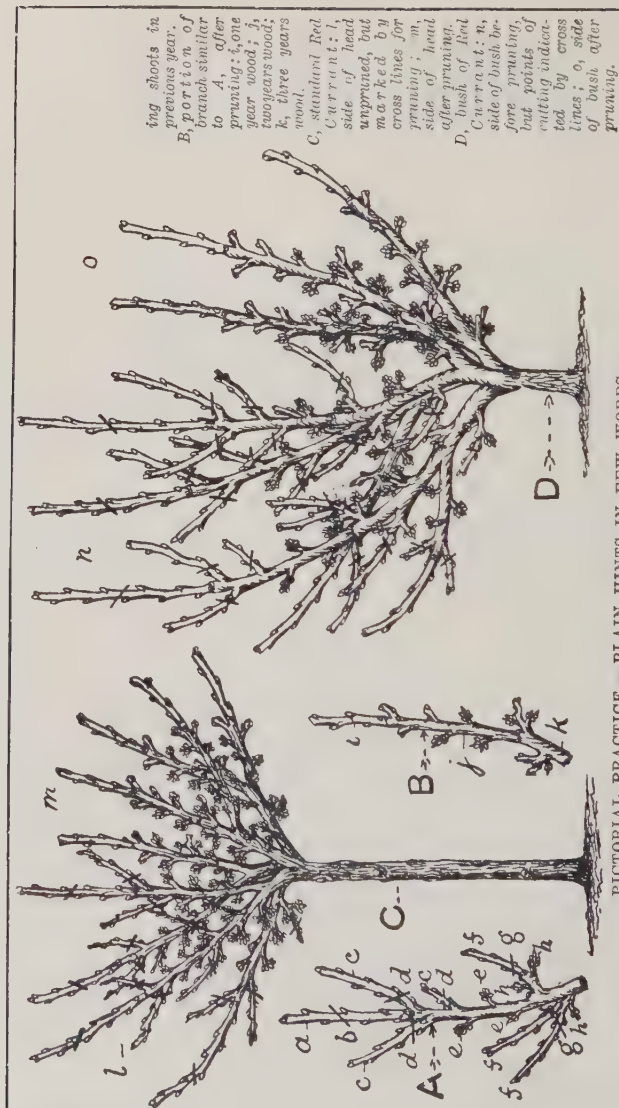
PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 17.—WINTER PRUNING BLACK CURRANTS.

REFERENCES.

A, natural bush; a, side of bush before pruning, the growths being rather thickly disposed and somewhat crowded with suckers; b, side of bush after pruning, the most promising

branches, with young wood of the previous year, stubby shoots and spurs, being retained, and the long, bare, and straggling branches cut clean out or shortened to promising young growths lower down. The suckers must not be removed, but thinned of



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 18.—WINTER PRUNING RED AND WHITE CURRANTS.

REFERENCES.

A, portion of a branch; *a*, leading or continuation growth; *b*, point of shortening the leader to cause buds to start at the base; *c*, side shoots; *d*, point of shortening to

induce spur formation close to the branch; *e*, natural spurs; *f*, growths from spurred shoots of the previous year; *g*, points of shortening; *h*, artificial spurs, or those produced close to the branch as a result of shorten-

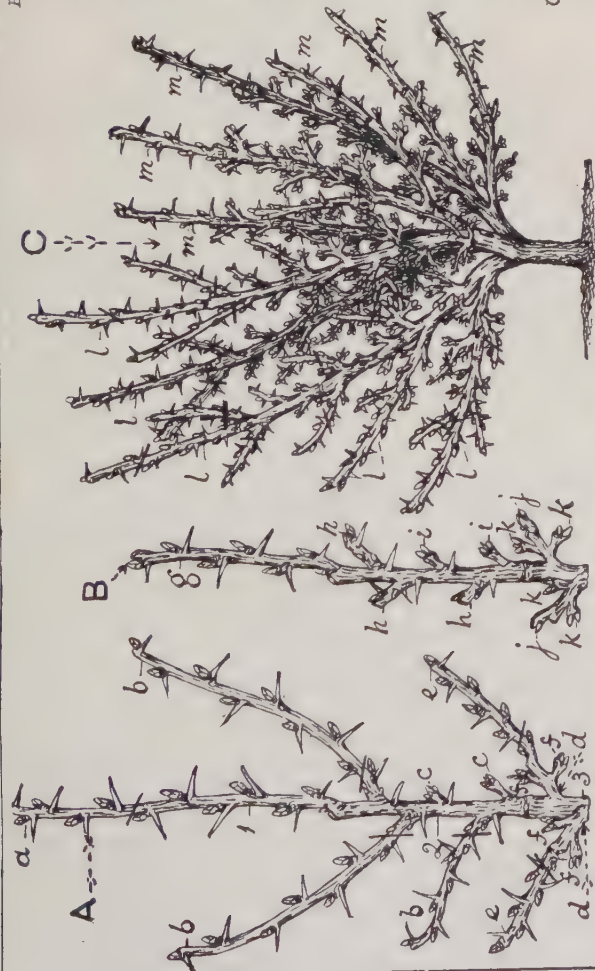
ing shoots in previous year.
B, portion of branch similar to *A*, after pruning; *i*, one year wood; *j*, two years wood; *k*, three years wood.

C, standard Red Currant; *l*, side of head unpruned, but marked by cross lines for pruning; *m*, side of head after pruning.

D, bush of Red Currant; *n*, side of bush before pruning, but points of cutting indicated by cross lines; *o*, side of bush after pruning.

B, part of a branch, similar to A, after pruning; g, leading shoot shortened to cause the buds to break at the base, and thus provide a vigorous continuation growth and spurs, or shoots to form them, for bearing; h, side shoots shortened to within 1 inch of their base; i, natural spurs; j, shoots from growths spurred in previous year, shortened to within 1 inch of their origin; k, spurs not to be shortened, as that implies cutting away the fruit which they are likely to bear.

C, bearing bush of Gooseberry; l, branches before pruning, but marked by cross lines for that operation; m, branches after pruning.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 19.—WINTER PRUNING THE GOOSEBERRY.—SPUR SYSTEM.

summer; b, side shoots; c, natural spurs; d, spurred growths; e, shoots from extremity buds; f, spurs. Ages of wood: 1, one year; 2, two years; 3, three years.

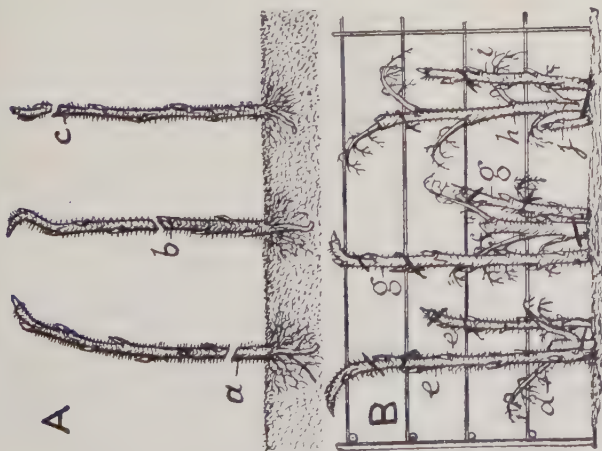
REFERENCES.

A, part of a branch before pruning, but marked by cross lines for that operation; a, leading shoot of preceding

tell of old, neglected bushes, nearly as thick as a thorn hedge, which have been caused to bear splendid fruit by being thinned under practical instructions, and afterwards dressed with a fertiliser. I agree that such bushes are not satisfactory subjects to take in hand, but they are never beyond improvement. If operating on them myself I invariably attack them from the base, first clearing away any suckers which may be springing up from the rootstock, then getting to work on some of the main branches with a small saw. With three or four of these cut away access can generally be got to the centre of the bush, and then the sécateurs will quickly clear a space between the principal growths.

Gooseberries ought to be so trained that when gathering time comes the grower has only to take hold of the tip of the branch and draw it down to be able to pass his hand freely along the spurs, and gather the fruit rapidly and comfortably. This condition is easily secured when he has the training of the bushes from an early stage. The nurseryman who raised them from cuttings will probably have shortened them in their first year, perhaps also in their second, so that they have about half a dozen strong young shoots. These may be shortened one-third their length at planting, but after that the leaders may be allowed to extend. Fruiting spurs will develop on these branches. As regards the side shoots that push from them, the lower ones should be shortened to six leaves in August, and cut back to two buds the following spring; the upper ones, or such of them at least as space can be found for without crowding, may be left to bear. In looking over the young wood with a view to select a few for retention, first remove any that grow towards the middle of the bush. Gooseberries should not be pruned in autumn, but in spring, as if left somewhat crowded in the winter and dusted with lime while wet less damage is done by birds. (For details see Fig. 19, page 31.)

Raspberries.—The Raspberry is about the easiest of all the small fruits to manage, and perhaps the most neglected. It is a case of familiarity breeding contempt, presumably. There are a few Raspberry stools in nearly every garden, just as there is a boot-scraper. The one is as common an object as the other, and excites about as much attention. This is a little unfortunate. The boot-scraper, while serving a useful, if modest, purpose, does not bear crops of delicious and useful fruit; the Raspberry does. It is not unreasonable, therefore, to suggest that the Raspberry claims a somewhat higher dignity than the boot-scraper. On most of the principal points of pruning in the case of Raspberries experts are agreed, notably in regard to the value of shortening young canes after planting. Inexperienced growers are invariably eager to rush their canes into bearing at once, and are very apt to demur when advised to sacrifice fruit the first year. Yet this advice is the very best which could be given. Canes that are hard fruited immediately after planting will surely be followed by a meagre crop of weak successional canes. There is full accord on another point, namely, that established stools should be annually thinned out, the canes that have borne fruit being removed, and those which have pushed up from the base retained for fruiting the following season. I do not agree, however, with the advice to cut the old canes out right from the base directly the fruit has been gathered, because I believe that when the sap begins to fall it nourishes the basal buds. Good Grape growers do not usually spur their Vine laterals close in to the rod directly they have cut the bunches: they shorten the shoots halfway back when the leaves begin to ripen, and defer the final pruning till the sap has fallen. So I think it should be with



REFERENCES.

A, vigorous, well rooted canes: a, cut down after planting to about 6 inches—good; b, shortened to 15 inches—fair; c, tip only cut off—bad.

B, results of shortening. Short pruning (da): d, shortened cane (it has produced a cluster of two of fruit, and is marked with a cross line for cutting away after the fruit is gathered, or in autumn); e, sturdy young canes for bearing in the following summer, tips only cut off (cross lines). Medium pruning (Ab): f, cane of preceding year after fruiting in current season cut out at cross line; g, canes of last summer's growth duly shortened (cross lines). Long pruning (Ac): h, old cane which has borne a fair crop of fruit; i, young cane of moderate growth capable of producing a little fruit in the following summer; j, small cane incapable of bearing fruit, but generally prolific in sending up suckers the following season. Observe that as a result of not cutting hard after planting weak growth follows.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 20.—PRUNING THE RASPBERRY.

Raspberries, for the fruiting system is to all intents and purposes the same. The grower who shortens the canes when the leaves change colour in autumn, and prunes hard in winter, will get fine crops of fruit if his soil and other treatment are right. In some parts of the country a system prevails of pruning the canes to different heights; for instance, in the case of a tall sort with half a dozen canes, two are cut back to within 18 inches of the ground, two others to 3 feet, and the rest merely tipped. I have known this practised with very good results. It has the advantage, to some cultivators, that the fruit is not all in at one time. The autumn-fruiting sorts should not be forgotten. These should be pruned in spring to get late growth. (*For details of Raspberry pruning, see Fig. 20, page 33.*)

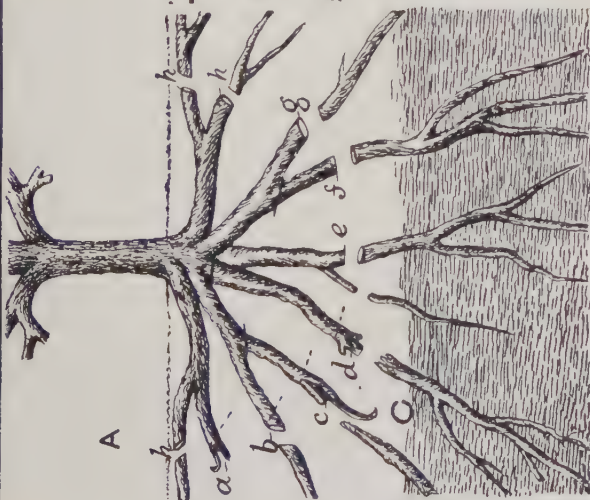
Chapter IV.—Points About Root Pruning.

WHEN all is said and done on the subject of pruning, it remains the fact that the real secret of fruitfulness in a tree lies at the root. If the roots are right the fruit will come—large fruit, finely coloured, and plenty of it. Can the same be said of the head? I trow not. Pruning the branches of fruit trees becomes a necessity when we have to grow them on the restrictive system to suit small spaces of ground; but were it not for that the knife might be kept away from them after the first early shaping without any harm resulting—in fact, with positive benefit.

In my nursery days—the nursery, be it understood, being one in which a rugged old fruit foreman acted the part of “nurse”—a system of culture was adopted which has always seemed to me to be as near perfection as it is possible to get. Its point was root development. Every item in the cultural routine centred on this one thing. In describing the details of the practice to audiences, often largely composed of experts, I have been looked at with a surprise that bordered on incredulity when I spoke of a hole 6 feet across and barely 1 foot deep being left after the lifting of a tree only three years old. Yet in lifting the young trees to which I refer with the object of filling orders, the workmen began, perforce, 3 feet from the stem, because if they had begun nearer they would have torn to pieces a whole mat of fibrous roots. The roots of these trees did not strike down in the form of a few thick thongs; they ran along the surface in the shape of fibres—a perfect web of them. Of course, such trees as these were always well nourished, because the roots were near the surface, where the full influence of the air kept a constant store of food ready. They were pictures of health and models of cleanliness—no gum, no canker, no American Blight.

Now, how were these trees made to form a mass of roots? and how were the roots kept near the surface? Both questions are easily answered. They were induced to form fibres by being lifted and replanted, twice if necessary. If a young tree is lifted and put back again the second year after planting, the stronger roots are broken and exuberant leaf action is checked. Beyond paring over the ends of all broken roots with a sharp knife nothing need be done. The tree is simply taken out and put back again.

As to the surface action, it was not secured by any such antiquated and useless device as putting flat stones beneath the tree. We did not go foraging around the country and buying up surplus supplies of paving stones from indigent corporations that had overstocked themselves, and were in the way for getting a wiggling from angry ratepayers. It was all a matter

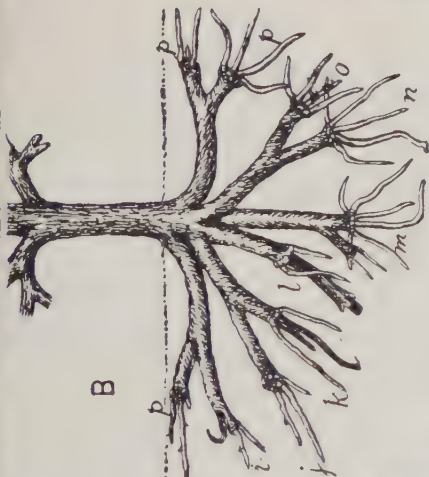


PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 21.—HOW TO PRUNE ROOTS.

REFERENCES.

A, root system of an Apple tree showing procedure.



WRONG: a, root detached with a blunt spade, or in a bungling manner, the wood being jagged and the baric torn; b, root detached by a downward cut; c, root split in the proper use of the spade; d, root chopped off and both wood and baric bruised.

RIGHT: e, transverse or straight-across cut on a straight down root; f, slightly upward cut on a diagonal down root; g, upward cut on an oblique root; h, upward cut on horizontal roots.

The dotted cross lines indicate the proper direction and place of cuts on roots which have been wrongly detached.

R, results of wrong and right cuts.

14. *roots of wrong and negative*.
 WRONG; \bar{w} , roots pushed from the under side of a root detached in a bungling manner, the upper portion dying back; \bar{j} , roots emitted from a downward cut on the lower side of the root; \bar{k} , roots pushed from a root

split in lifting
the tree, which
root died back
in conse-
quence; l, roots
emitted from
a severely
bruised root,
which has died
back consid-
erably.

RIGHT: m,
roots from
transverse cut;
n, roots from
slightly up-
ward cut; o.

roots from upward cut on oblique root; p, roots from horizontal (or nearly) upward cut roots.

of culture. If I may be permitted a seeming paradox, the roots were kept up through being afforded every facility for going down. The land was very deeply trenched and thoroughly pulverised, so that you could press a walking stick up to the handle in it without much difficulty—admirably calculated, one would say, to encourage roots to descend. Well, they did not strike down, and for this reason: A soil that is thoroughly pulverised is a soil that is full of air and moisture. It does not crack through drought, because it is never dry. If it were dry near the top, roots would rush down to try and find moisture below; as it is moist near the top the roots stay there. The soil being full of air, the “solubising” (to coin a word) of plant food is in full progress, and the tree rapidly multiplies its feeding fibres in order to take advantage of the good things. In my experience, now approaching a quarter of a century, amongst cultivated trees, I have seen all sorts of devices resorted to for making them healthy and fruitful, from doing away with grafting to hanging bricks on the branches, or laying pavements under orchards; from tremendously hard pruning to no pruning at all. But none of them (harmless and amusing for the most part) ever got together so magnificent a lot of trees as those which I have been describing.

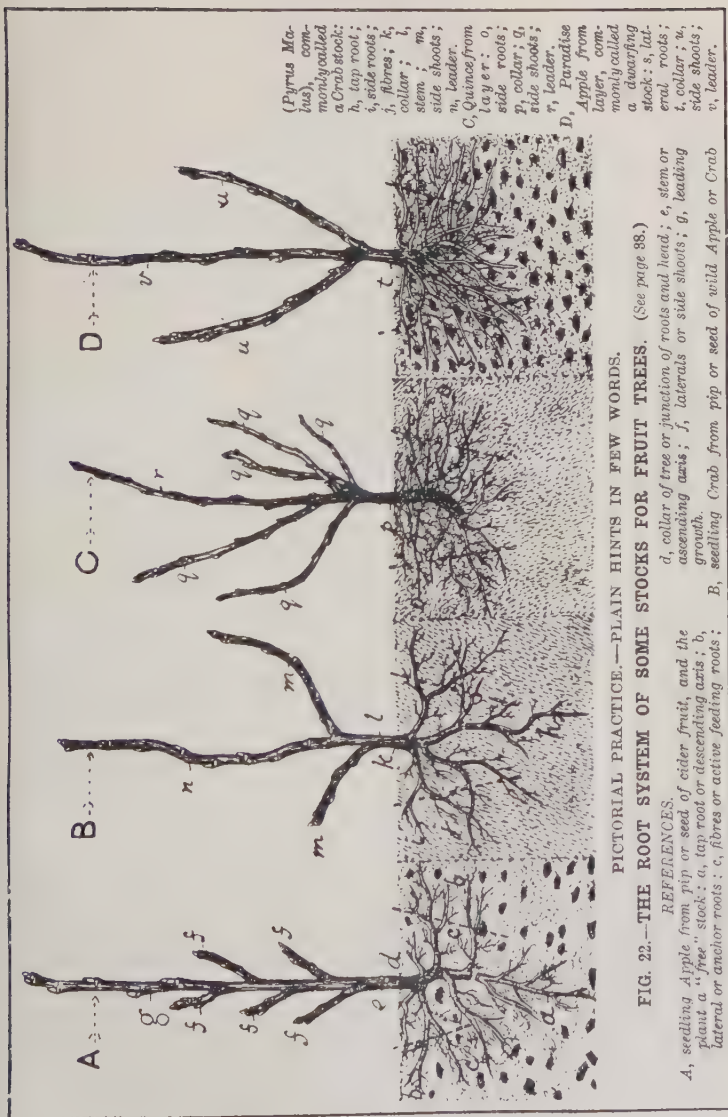
It follows from what has been said that simply chopping off so many roots from a fruit tree is not the be-all and end-all of root management. The first thing is to get the soil into the right mechanical condition for holding moisture through long periods of drought, and for permitting the free ingress of air. When this condition is secured by trenching, exposure to the atmosphere, and vigorous manipulation by spade or fork, early relifting will do nearly all the rest.

To come to details, a young tree should not be lifted when the growth is short and fruit spurs are forming fast, but a tree should be lifted when the summer growths are numerous, are 18 inches long or more, and devoid of fruit buds. Begin 3 feet from the tree, work carefully towards the stem, and as soon as fibres are met with delve down below the tree and work it out. The operation may be performed as soon as the leaves ripen in autumn, if the weather be showery and the soil moist; but if dry it should be deferred.

It may be objected that the foregoing remarks only have interest for those people who are starting with fruit, and that they are not of much value to the large number who enjoy a legacy of trees from a bygone generation. Such a protest would be reasonable. There are thousands of trees in the country of which the roots are in an unsatisfactory condition that are too large to lift, and may not be done away with. In this case it is well to make a trench round the tree so as to get at the roots, doing half one year and half the next, whenever a tree seems disinclined to bloom.

Root pruning is often carelessly done, the roots being severed by blows with a spade. A knife (or a small saw for very thick roots) should be used. It should be remembered that the growing roots of a tree are much softer than the branches, and a sharp pruning knife will easily sever any root up to 1 inch in thickness. Downward cuts should not be made. Upward cuts are better, because the fibres which push from them have a tendency to strike horizontally rather than downward (see *B*, Fig. 21, page 35).

In root pruning large trees a special effort should be made to cut strong roots striking obliquely into bad subsoil. These are often difficult to get at, as I know from sad experience, for they often plunge down almost perpendicularly at a short distance from the bole; but some of them ought to be attacked, as they are a terrible source of unfruitful top growth.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 22.—THE ROOT SYSTEM OF SOME STOCKS FOR FRUIT TREES. (See page 88.)

REFERENCES.

A, seedling Apple from pip or seed of cider fruit, and the plant a "free" stock; a, tap root or descending axis; b, lateral or anchor roots; c, fibres or active feeding roots;

d, collar of tree or junction of roots and head; e, stem or ascending axis; f, laterals or side shoots; g, leading growth.

B, seedling Crab from pip or seed of wild Apple or Crab

Chapter V.—Fruit Stocks and Grafting.

CARLYLE made fun, in his grim, sly way, of the countryman who “had no system”; but Hodge gets along rather better, in happy ignorance of what he would probably describe as his “innards,” than a good many people whose vast knowledge of physiology only just stops short at ability to conduct a learned *post-mortem* on themselves. Ignorance was just as blissful in the case of the old-style fruit grower, who knew nothing about the system of his trees, yet managed to get more fruit off them than the man who knew everything.

In these days we are not satisfied with knowing that a certain tree will bear Apples if we will only let it; we want to know what stock it is on, how it was worked, whether the man who budded or grafted it has passed an examination in pomology, and various other side items. Well, there is no harm in knowing a few facts about stocks, so long as we do not make the mistake of thinking that such information alone will fill the fruit room and reduce Covent Garden to astonished admiration: let us therefore glance at them for a few moments. A man has only to pass a probation in a fruit nursery to learn that there are scores of fruit stocks; and he has only to keep his eyes open to discover that half a dozen of them are vastly more important than all the rest. What, to begin with, is a “stock”? It is a species of the same genus as the fruit with which it is associated, of very poor fruiting qualities, yet possessing merits in the way of free, healthy, hardy growth, or of abundant rooting near the surface of the soil. Some people would do away with stocks, and grow the fruits from seed or cuttings on their own roots and stem. Here are a few of the stocks used for fruit trees:—

Apples.—Broad-leaved Paradise, narrow-leaved Paradise, Doucin, Non-such, Crab, and free (free stocks are seedlings of cultivated Apples, principally cider sorts).

Apricots, same as Peaches or Plums.

Cherries.—Mahaleb for dwarf trees, Gean and seedlings for standards.

Peaches and Nectarines.—Almond, Mussel, Myrobalan, St. Julien, and others.

Pears.—Common Pear and Quince.

Plums.—Brompton, Brussels, Black Damask, Mussel, seedling Plums, St. Julien, and others.

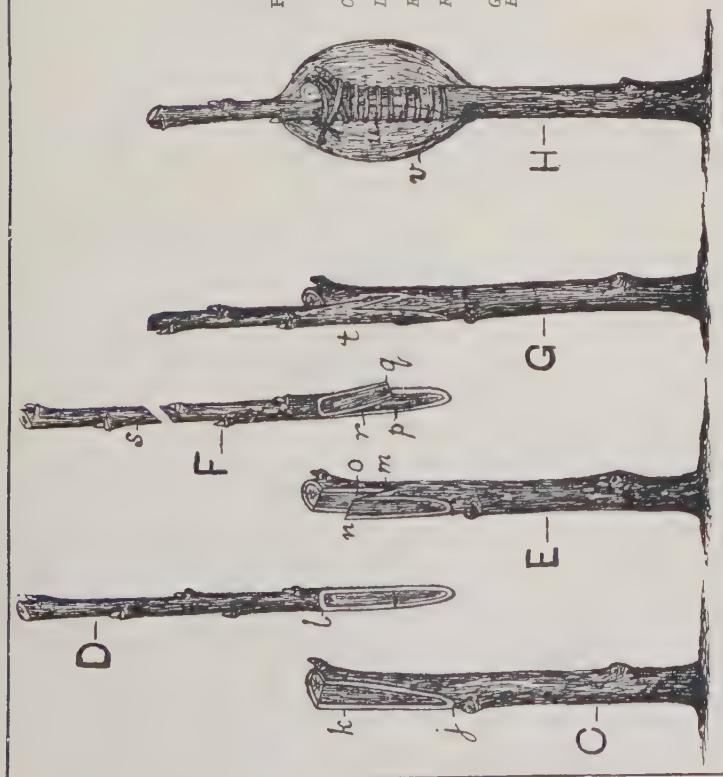
Currants and Gooseberries are propagated by cuttings inserted in late summer. Take shoots 10 to 12 inches long, and remove the buds from the lower part in the case of Red and White Currants and Gooseberries, but not of Black Currants. The most important stocks are the broad-leaved Paradise and the Crab (Apples); the Gean and the Mahaleb (Cherries); the Mussel and St. Julien (Peaches and Nectarines); the Pear and Quince (Pears); the Brompton and Mussel (Plums). With respect to Pears, however, there are some varieties which will not take to any stock, and have to be worked on a foster variety which is already established on the stock before they will make a good union. I have found Beurré d'Amanlis to be the most useful of these foster Pears; Ollivier de Serres is also serviceable, and there are many others.

PICTORIAL PRACTICE. — PLAIN
HINTS IN FEW WORDS.

FIG. 23.—WHIP GRAFTING YOUNG
FRUIT TREES.

REFERENCES.

- C, stock with first cut : *j*, point of starting cut ; *k*, tissue exposed.
D, scion with first cut : *l*, shoulder to fit top of stock.
E, stock with second cut : *m*, cut ; *n*, tongue thus formed ; *o*, opening for scion.
F, scion with second cut : *p*, cut ; *q*, tongue ; *r*, opening for stock ; *s*, scion shortened, three buds left.
G, stock and scion fitted together.
H, after tying and claying ; *u*, ligature ; *v*, section of clay. (Grafting wax may be used instead of clay.)



I do not think that the person who grows a small collection of fruit for private purposes need trouble much about the stock question. He is not likely to gain much by it, and he may easily waste both time and money. Trade and market growers should, however, study the subject. To them Fig. 22, page 37, can hardly fail to be helpful. It shows that "free" and dwarfing stocks are essentially different. The former, which is raised from seed, has a tap root, which must be removed before the stock is worked; the latter, which is raised from a layer, has no tap root. Observe here an important point. In root pruning trees on seedling stocks it is the central, deep-striking roots which require severing, not the smaller horizontal ones (see the dotted diagonal lines in *A*, and the tap *a*; if the roots outside the lines were cut and the tap left unshortened, harm would be done). In root pruning trees on layered stocks the rambling side roots may be shortened, and the central roots left alone. This point does not receive due weight from cultivators, who rarely think of the stock when root pruning. The illustrations make clear the natural difference between Crab (or free) and Paradise stocks. The one has a strong, spreading root system, which must be checked by transplanting and cutting the tap root if early fruitfulness is to be had. The other has a close, fibrous root system, more conducive to early productiveness.

Budding.—Fruit stocks may be worked with either buds or grafts. Buds are far the best economically, but if a bud inserted in summer fails a graft may be put on in the following spring. Dwarfing stocks are best budded about 4 inches above the ground, stocks for standards 6 or 8 inches. The work is generally done in July or August. If the first month is very dry the budder frequently waits till the latter, in the hope that friendly rains may encourage a free flow of sap, which facilitates the raising of the bark. The old **T** cut—a horizontal cut across the face of the stock, and an upward perpendicular cut to intersect it—is the best. By working the flattened tip of the knife handle into the perpendicular cut in the direction of the horizontal one the bark is raised, and space afforded for the bud. A beginner who has a few Roses should practise on them first, as they give valuable practice for the similar, but rather more difficult, task of fruit budding. Make the fruit bud quite 2 inches long, for a "tail" of bark is very useful: it can be gripped between the fingers and drawn down, thus causing the pith to rise sufficiently to be caught hold of with the finger and thumb and worked out. Until this pith can be extracted without dragging out the small green growing germ at the base the practice must go on. The most suitable Apple or other wood from which to make buds is vigorous, healthy wood of the current year's growth. Take such a shoot, press the blade of the knife into the wood about 1 inch above a leaf, turn it, and draw the blade horizontally along the shoot beneath the leaf, bringing it out about 1 inch below. Cut off the leaf, leaving $\frac{1}{2}$ inch of stem to hold the bud by; turn it cut face upwards, and remove the pith as already described. If the bud is somewhat too long for the **T**, it is easy to shorten the upper part. Make a neat fit, and then tie the bud in with raffia, folding it evenly over from top to bottom. The buds must always be kept moist; if dry they will not take. If there is much rain in late summer there may be a rapid union and considerable swelling, in which case the binding material must be loosened. In any case I believe in removing it in autumn, so as to permit of the buds becoming hardened. When growth starts freely in the spring, cut off the head of the stock 3 or 4 inches above the bud. The stump ("snag") is left simply to tie the young growth to until it is

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 24.—MAKING A FIT IN WHIP GRAFTING.

In whip grafting it is very important to make even, sloping cuts and secure a proper fit. One edge of bark and one of scion should be in contact.

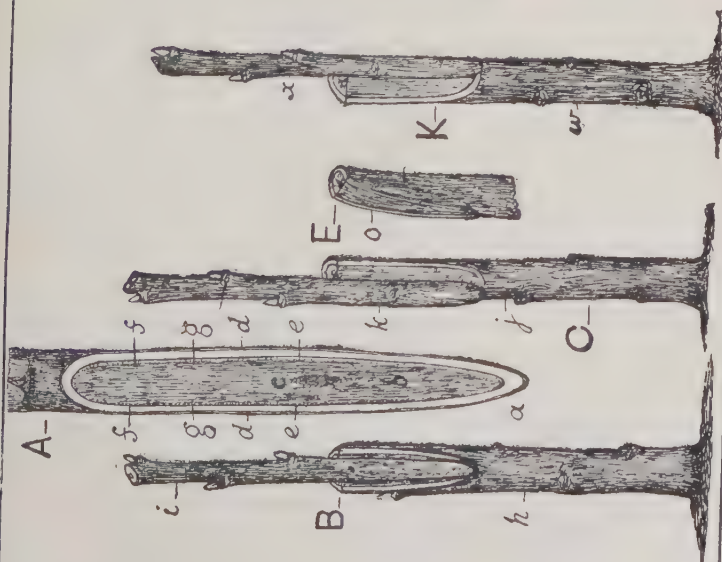
A, base of scion properly cut; a, bark; b, wood; c, pith; d, outer bark; e, inner bark; f, cambium (growing part); g, alburnum.

B, bad fitting; h, stock; i, scion. Observe that owing to the scion being much smaller than the stock the white edges of the latter are not in contact.

C, bad fitting; j, stock; k, scion over edge of stock.

E, bad cutting; o, a rounded instead of an even surface.

K, good fitting; w, stock; x, scion, outer edges of stock and scion in contact.



established, and may come out in autumn. The tree is now no longer a stock, but an Apple or Pear, and has to be trained; see previous chapters.

Whip Grafting.—If the bud has not taken in spring, the stock must be cut down to be grafted. Clear away the top hamper, make an upward sloping cut about 1 inch long on the stump, and a downward cut $\frac{1}{2}$ inch long in the face of the first cut. It is now ready for whip grafting. Have some shoots about as thick as a lead pencil of the variety to be increased at hand, cut them into lengths of about 4 inches, make two cuts corresponding to the stock on the lower portion, and fit the two together. Tie securely, and wax or clay to exclude air. When care is taken that one edge each of stock and scion are in union (both cannot be if they are of unequal sizes) failures are few. (Fig. 23, page 39, and Fig. 24, page 41.)

Grafting Large Trees.—Of course, whip grafting is not suitable for large trees, but here we get away from the question of stocks and the turning of them into fruit trees, and come to a different one—that of changing a variety. Probably this is of greater interest to most fruit growers than the other; certainly there are many who have unsuitable sorts or unhealthy trees, and who would like to improve them by grafting. All such work may be done in April, but the good grower frequently begins before, first by taking off the shoots for scion making, and laying them in a moist, cool, shady place until wanted; and, secondly, by heading back the old trees and clearing the branches away, thus facilitating the actual operation when the proper time comes. He has then only to saw off 1 inch or 2 inches to get fresh wood, and he is ready to graft. (Fig. 25, page 43.)

Crown grafting, *i.e.* making a space between the bark and the wood for the reception of the pared-down scion, is good, given careful tying; without this the scions would be blown out. First slit the bark, then make the space with a piece of hard wood or bone, withdraw this, and substitute the scion after a sloping cut has been made in it about 1 inch long.

Cleft grafting answers equally well with good workmanship, and tying is hardly needed. In this operation the stump is split to a depth of 1 inch by laying the edge of a strong, heavy blade across the centre and giving a sharp tap with a mallet. The blade is removed, and the cleft held open by inserting a small upright chisel in the centre. A portion of wood is cut out of each edge at both sides so as to form a wedge-shaped space, and the scion is cut to fit it. By slightly depressing the chisel the scion can be got well in, and directly the chisel is withdrawn the cut pieces come together and hold the graft tight. (Fig. 26, page 44.)

As so much of the success of grafting depends on excluding the air (Fig. 27, page 45), I give a few specially chosen recipes for covering materials.

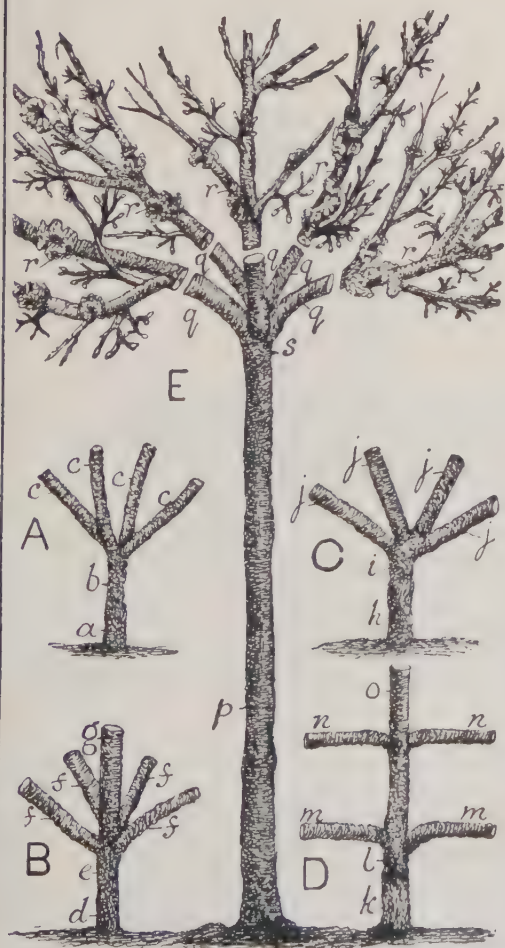
A Good "Pug."—Mix clay, loam, and cow manure into a paste, chop up some hay and incorporate with it, or use a little hair. Have a pail of water handy. Wet the hands, and form a cone of "pug" round the graft.

A Good Wax.—

| | |
|----------------------|--|
| 8 parts common resin | } Put the tallow in an old iron pot, break up the resin and pitch, and spread over it. Add the ochre, and "cook" for an hour, stirring well. Apply warm. |
| 3 " red ochre | |
| 3 " tallow | |
| 1 " Burgundy pitch | |

Another Good Wax.—

| | |
|------------------------|---|
| 7 parts Burgundy pitch | } Boil, stir, and apply warm as before. |
| 7 " black | |
| 3 " yellow wax | |
| 3 " tallow | |

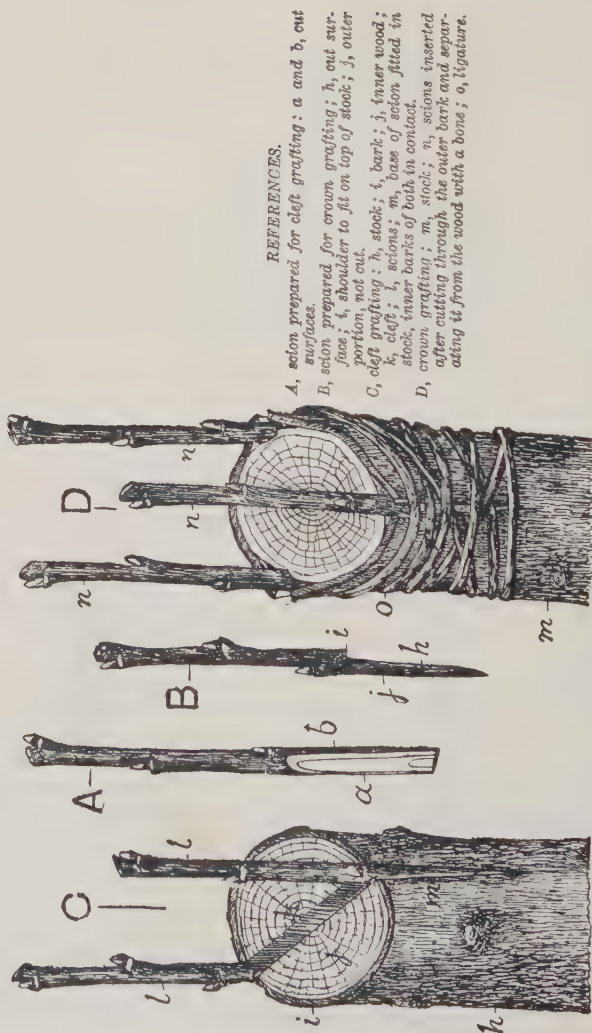


REFERENCES.

- A, bush tree: a, stock; b, stem of existing variety; c, c, c, branches.
- B, pyramid: d, stock; e, existing variety; f, side branches; g, leading branch.
- C, fan: h, stock; i, stem of existing variety; j, branches.
- D, espalier: k, stock; l, stem of existing variety; m, lower tier of branches; n, second tier; o, central growth.
- E, standard with canked branches: p, stem; q, branches; r, canked limbs removed; s, point of shortening when the branches are canked near the stem.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS

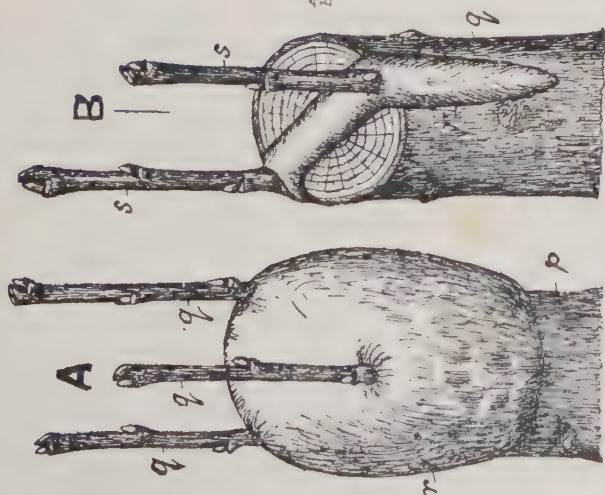
FIG. 25.—PREPARING OLD TREES FOR GRAFTING.



REFERENCES.

- A, scion prepared for cleft grafting: a and b, cut surfaces.
 B, scion prepared for crown grafting: h, cut surface; i, shoulder to fit on top of stock; j, outer portion, not cut.
 C, cleft grafting: h, stock; i, bark; j, inner wood; k, cleft; l, scions; m, base of scion fitted in stock, inner bark of both in contact.
 D, crown grafting: m, stock; n, scions inserted after cutting through the outer bark and separating it from the wood with a bone; o, ligature.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.
 FIG. 26.—CROWN AND CLEFT GRAFTING.



REFERENCES.

A, claying; p, stock; q, q, scions; r, clay.
B, waxing; q, stock; r, wax along the side, covering the lower part of the scion, to be continued along the cleft; s, scions.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.
 FIG. 27.—COVERING GRAFTS TO EXCLUDE AIR.

If the grafter wants to avoid the trouble of wax-making, he should write to a seedsman for a tin of L'homme Lefort's Mastic.

Varieties for Re-grafting.

In choosing varieties for re-grafting unsatisfactory trees, select strong growers, such as:—

| | | |
|---------------------|--------------------|---------------------|
| Annie Elisabeth. | Ecklinville. | Stone's |
| Blenheim Pippin. | Emperor Alexander. | Tower of Glammis. |
| Bramley's Seedling. | Lord Derby. | Worcester Pearmain. |

Chapter VI.—Soils and Manures.

THE question of soils and manures for fruit trees presents itself under two aspects—establishing new trees, and improving old ones.

I have already expressed an opinion on the common practice of placing large quantities of rich dung underneath the roots of young fruit trees when they are planted. It is not, in my opinion, the best plan. I cordially agree that it is superior to starving the trees; I know full well that it was practised in the case of several plantations that are now thriving and healthy; but I also know that in many instances it has led to a great amount of gross wood being made, and to the fruiting being thrown back in consequence.

Theoretically, we ought to differentiate between the varieties of fruit when we consider this question. Compare, for example, an Emperor Alexander Apple with a Stirling Castle, or a Tower of Glammis with a Manks's Codlin. The Emperor Alexander loves to romp away into great, strong branches; the Stirling Castle delights in forming spurs. To be scientifically exact in manuring, we ought not to give the former half so much manure as the latter, because in the one case we want to check growth, and in the other to encourage it. Unfortunately, it is not always easy to ensure the right thing being done. The average planter likes to put in the particular varieties which he fancies, just because he fancies them; and he wants to treat them all alike, because it is most convenient to him. I may be wrong, but I believe that, however eloquently experts may argue on the merits of individualising, the great majority of growers will go on lumping the sorts together, and feeding and pruning them by rote.

If the ground on which fruit trees are planted is well drained, and the soil is bastard trenched, a much more favourable state of affairs exists than is secured by the mere shovelling in of manure. It is a common practice to make a deep, narrow hole, with "up and down" sides, half fill it with manure, and put the tree on the top. This is not the best practice. True, the manure forces plenty of growth, but the wood is not always of a fruitful character, and the tree settles down too deep, owing to the rotting away of the manure beneath it. Water sometimes collects, too. Very little manure is needed beneath a tree. In my own somewhat extensive practice I have made it a rule to put only a light coat underneath, and to mix it well with the soil, then to apply a good dressing above in the form of a mulch.

It may be asked if artificial fertilisers have been used in the place of dung. Most certainly, and with equally good results. It is the mechanical state of the soil which is the real arbiter of failure or success, not the

particular sort of manure used. I have planted trees under the three following conditions:—

1. Dung below and above the roots.
2. Artificials below and above the roots.
3. Artificials below and dung above.

The last has perhaps satisfied me the best, but where artificials alone have been used the trees have done well. I give herewith a formula which I have used with very successful results:—

A MIXTURE FOR USE WHEN PLANTING TREES.

- | | |
|----------------------------------|------------------------------|
| 3 lb. of superphosphate of lime. | 1 lb. of steamed bone flour. |
| 2 lb. of nitrate of potash. | 1 lb. of nitrate of soda. |
| 1 lb. of sulphate of lime. | |

The quantity (8 lb.) is sufficient for 1 square rod ($30\frac{1}{4}$ square yards).

An important question arises in connection with planting fruit, and that is—Will all kinds of fruit do equally well on the same kind of soil? Under natural conditions they certainly will not. I have seen many instances of failure through indiscriminate planting. For instance, a grower planted many sorts of Apples on a strong, tenacious, undrained clay, and three parts of them died. He appeared to feel himself a very much injured man. Of



FIG. 28.—A CLEFT GRAFTING KNIFE.

a, handle; b, blade; c, wedge. (See page 42.)

course his was not a natural Apple soil. If he had observed how much better Plums and Raspberries succeeded in his locality, he would have saved himself a great deal of money. A grower in another part of the same county planted some Cherries in a bottom, and more on a ridge in the same field. Those on the ridge did twice as well as those in the bottom. An examination revealed the truth of a suggestion which I at once threw out, namely, that a seam or stratum of chalk ran along the ridge, not far from the surface.

In all cases where planting, but especially where planting for profit, it is of immense importance to suit the crop to the natural circumstances. If this can be done a long stride towards success will have been taken. Many waste energy and capital by trying to grow crops which are not adapted to the locality, and have, so to say, to be forced on Nature. It may be helpful to some persons if I append a few generalisations on this subject.

A slope with a southern or south-western aspect is better than a northern or eastern one, providing it is not exposed to strong, cold winds.

A slope is generally better than a bottom, because frost is not felt so severely. Late-blooming sorts should be planted in bottoms.

Apples usually do best in a light to medium loam. They are not suited to heavy land. (See "Selections" in a future chapter.)

Pears will thrive better in strong than in sandy loams.

Plums will succeed in strong land, if it is drained; if it is not, they are apt to push a good deal of young wood which is often badly cut by frost.

Cherries do not like clay, a medium loam overlying chalk being best. They loathe stagnant soil.

Gooseberries, Red and White Currants, and Strawberries all thrive in a sound loam, but rarely in clay.

Black Currants and Raspberries will thrive in clay if it be drained.

Generally speaking, soil that will make good bricks will grow good fruit.

Remember that it does not follow that a plantation made on high ground is naturally well drained. Ground on a hilltop may need draining almost as badly as soil in a valley. I could quote an instance where forgetfulness of this led to disaster.

A great deal of the foregoing may tend to alarm small growers, for it is quite likely that circumstances will debar them from giving each fruit its particular soil. They have only one small plot, and they have to make the best of it. Here, however, culture comes in and sweeps difficulties away. While it is true that natural surroundings exercise considerable sway, experience teaches me that by thorough cultivation almost any soil may be made suitable for fruit. In this connection the private grower has an advantage over the market cultivator, for the man with a small piece of ground can, to a great extent, adapt it to his fruits by thoroughly cultivating it; whereas the man with a large quantity may, from want of capital, have to adapt the fruits to the soil.

The subject of soil and feeding is only half exhausted when the formation of new plantations is disposed of. There still remains the equally pressing matter of improving unsatisfactory trees already established. There is a tremendous field for expert knowledge and enterprise here. A tree bears small, malformed, specked fruit instead of large, fleshy, juicy specimens. Very well. Let us abuse the variety, let us abuse the soil, let us abuse the nurseryman who supplied the tree, but do not let us, under any circumstances whatever, try to improve it. If there were a tacit agreement among fruit growers to follow this line of conduct things could not be more hopeless than they are now. Scarcely any grower takes into account the bearing strain on a fruit tree, or the drain upon the resources of the soil. If the tree is heavily cropped he treats it just the same as if it were lightly burdened. If the soil is poor he leaves it as severely alone as if it were richly stored with nutriment. And he does not want any lecturer to show him, or any writer to tell him, that he is wrong.

There are few trees so old but that they may be improved, and the simplest of all ways of doing it is to spread a coat of good stable manure over the soil beneath them, not merely round the bole, but right out to the spread of the branches. Magical results often follow this practice. I think perhaps the most remarkable example of continuous culture of fruit on an allotment was that provided at Eynsford, in Kent, on some land belonging to Sir William Hart-Dyke. A cottager named Howard had a Winter Queening Apple for fifty years, and at the end of the half-century was able to exhibit a fine basket of fruit from it. The good old fellow attributed the continued productiveness of his tree to the fact that every other year he had taken off a little soil and spread on a coat of manure. He was right, of course.

Chemical fertilisers may be used with equally beneficial effects. As a proof of this I will ask my readers to glance at the accompanying figure. It represents Apples of the same variety gathered from similar trees growing close together. Each specimen fairly represents the fruit on its particular tree. The difference in treatment is nothing more nor less than the application of an "artificial" mixture to one tree and not to the other. I was asked at a lecture to name a mixture for the purpose of improving some unsatisfactory trees. I did so. The person most interested thought he would experiment with it. As a result he sent me the Apples shown. The trees that received no attention yielded fruit that would be dear at a shilling a

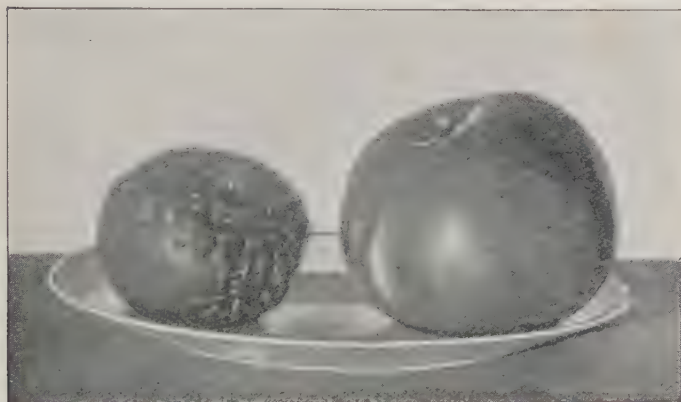


FIG. 29. APPLES GROWN WITH AND WITHOUT MANURE.

bushel; the tree dressed here produce that would be cheap at four shillings. Herewith I give the formula:—

A SPLENDID FERTILISER FOR IMPROVING UNSATISFACTORY TREES.

| | |
|-------------------------------|-----------------------------|
| 8 parts of superphosphate. | 4 parts of basic slag. |
| 6 parts of nitrate of potash. | 4 parts of nitrate of soda. |
| 4 parts of sulphate of lime. | |

Mix and use at the rate of 4 oz. per square yard in January or February.

Sewage is very valuable for strengthening trees. It will help a heavily laden tree to finish off a crop if given in summer; but as sewage tanks are often emptied in winter, I hasten to add that it will not be wasted if poured on then. Remember that, paradoxical as it may appear, liquid manure is better given when the soil is wet than when it is dry.



Chapter VII.—Selections of Apples.

It is profoundly gratifying that the demand for so wholesome a fruit as the Apple is on the increase, but it is profoundly humiliating that our agents have to run all over the world for their supplies. Perhaps some stickler for accuracy will interpolate that the agents do not run very far, because the oversea growers make haste to save them the trouble. Maybe; but it comes to the same thing in the end—namely, another item of a cool million or two which sleepy old John hands over to Uncle Sam or Cousin Cornstalk.

When we meet Uncle Sam or Cousin Cornstalk in the flesh he generally proves to be a good, kindly soul; and if we must needs take money out of our breeches pocket and put it in somebody else's, he might as well have it; but when all is said and done, we are an Apple-growing country in the best sense of the phrase, and we ought to be able to supply our own tables and markets.

To some ears the statement that we do not pay sufficient attention to choosing, growing, and marketing our Apples is, perhaps, getting a little wearisome. We have heard it many, many times; and the worst of it is that we have heard it the oftenest from those gentlemen who never grew an Apple except in an inkpot. All the same, there is truth in it. There is an art in selecting sorts to suit the soil and district; there is an art in growing them; and there is an art in selling them.

In previous chapters I have touched on points of culture; and I am bold enough to think that if the hints about preparing soil, applying fertilisers, and pruning which have been given are carefully followed, healthy trees will be grown. Let me now chat about varieties. When a beginner, or even an old hand for the matter of that, looks through a fruit catalogue with a view to selecting a dozen or two of Apples, he tears his hair in desperation. He finds ten, or even twenty, for every one that he requires; and what to put in and what to leave out raise a problem that he has trouble in solving. The difficulty is increased by the fact that most of the sorts included in the trade lists have something to recommend them. We might perhaps throw them into grades as follows:—

1. Apples that succeed with most people and in most soils. These we might call first-class varieties.

2. Apples that do fairly well with most people, and particularly well with some. These we might call second-class Apples.

3. Apples that do badly with most people, but are very good under exceptionally favourable circumstances, such as Ribston Pippin. These we might call third-class Apples.

Does someone cry out upon my presumption in relegating so delicious an Apple as the Ribston to the third class? I reply, What is the good of all its marvellous quality if the tree dies of canker? We have made fetishes of old Apples, and glorified them in spite of serious defects. It is time to stop this sort of thing.

Now, taking one thing with another, it is obvious that the average planter is likely to get the best results if he makes his selections out of the first-class varieties. He may perhaps miss one or two suitable sorts by turning a blind eye to the others, but in the long run he will come out right. **First, therefore, for the roll of honour.**



FIG. 31.—APPLE LORD DERBY.

A List of First-class Cooking Apples.

Beauty of Kent.
Bismarck.
*Blenheim Pippin.
*Bramley's Seedling.
Cox's Pomona.
Duchess of Oldenburg.
Ecklinville Seedling.
Gascoyne's Seedling.
Golden Noble.
Lane's Prince Albert.
Lord Derby.
Lord Grosvenor.
Manks's Codlin.
New Hawthornden.
Newton Wonder.
Potts's Seedling.
Stirling Castle.
Warner's King.
Wellington.

A Supplementary List of Cooking Apples.

| | | |
|-------------------------|------------------------|-------------------------|
| Annie Elizabeth. | Hollandbury. | Norfolk Beefing. |
| Bedfordshire Foundling. | Kentish Fillbasket. | Small's Admirable. |
| Betty Geeson. | Keswick Codlin. | Stone's (Loddington). |
| Cellini. | Lady Henniker. | Striped Beefing. |
| Emperor Alexander. | Lamb Abbey Pearmain. | Tower of Glammis. |
| Frogmore Prolific. | † Lord Suffield. | Waltham Abbey Seedling. |
| Hoary Morning. | Mère de Ménage. | Wormsley Pippin. |
| | New Northern Greening. | |

A Selection of First-class Cooking Apples, with their Seasons.

August and September.
Duchess of Oldenburg.
Lord Grosvenor.
September and October.
Stirling Castle.
Bismarck.
October to December.
Golden Noble.
Cox's Pomona.
Lord Derby.
Ecklinville Seedling.
October to January.
Beauty of Kent.
October to February.
Warner's King.
November to February.
Blenheim Pippin.



FIG. 32.—APPLE STONE'S.

* As orchard standards.

† First class except on heavy, cold soils.

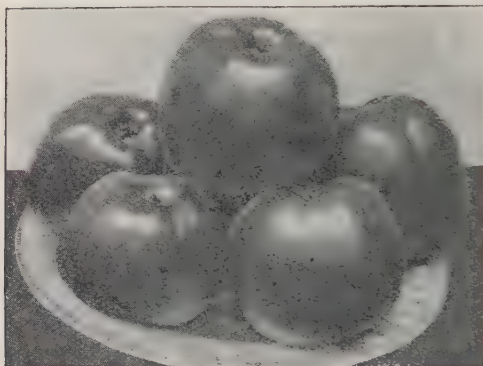


FIG. 33.—APPLE LADY HENNIKER.

November to March.

Newton Wonder.

Wellington.

November to May or June.

Bramley's Seedling.

Lane's Prince Albert.

A Supplementary Selection of Cooking Apples, with their Seasons.

August and September.

Keswick Codlin.

Lord Suffield.

September to December.

Emperor Alexander.

Waltham Abbey Seedling.

October.

Cellini.

October to January.

Hoary Morning.

Hollandbury.

Peasgood's Nonsuch.

Mère de Ménage.

Stone's (Lodding-
ton).

October to February.

Lady Henniker.

November to January.

Kentish Fillbasket.

Small's Admirable.

November to February.

Tower of Glammis.

November to March.
Bedfordshire Found-
ling.

November to April.

New Northern Green-
ing.

November to May.

Betty Geeson.

Striped Beefing.

January to May.

Hambledon Deux Ans.

Norfolk Beefing.

Varieties may be chosen from the above for special soils and situations, or to make up a collection.

A Selection of Good Dessert Apples, with their Seasons.

July and August.

Devonshire Quarren-
den.

Irish Peach.

*Mr. Gladstone.

August and September.

*Beauty of Bath.

Summer Golden
Pippin.

September and October.

American Mother.

Kerry Pippin.

Lady Sudeley.

*Worcester Pearmain.

Yellow Ingestrie.

October to December.

*Allington Pippin.

Duchess's Favourite.
Gravenstein.

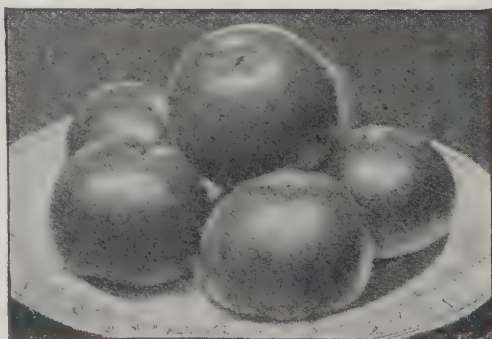


FIG. 34. APPLE COX'S ORANGE PIPPIN.

* May be chosen to make up a collection of twelve.

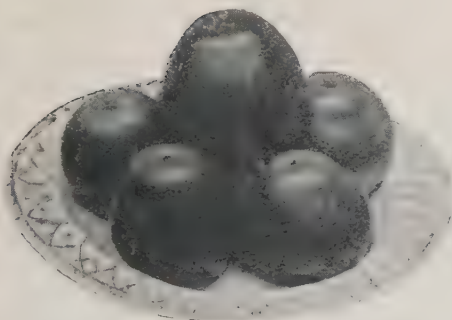


FIG. 35. APPLE WORCESTER PEARMAIN.

November to March.

Claygate Pearmain.

Keddleston Pippin.

November to April.

*Braddick's Nonpareil.

November to May.

Ashmead's Kernel.

December to February.

Adams's Pearmain.

Fearn's Pippin.

*Rosemary Russet.

December to March.

*Baumann's Winter

Reinette.

Golden Knob.

October to January.

Colonel Vaughan.

Cornish Aromatic.

King of the Pippins.

Scarlet Pearmain.

October to February.

Chelmsford Wonder.

*Cox's Orange Pippin.

October to March.

Court of Wick.

Hormead Pearmain.

Munnington's Pear-
main.

November to January.

Downton Pippin.

November to February.

*Blenheim Pippin.

Margil.

Ribston Pippin.

December to April.

Wyken Pippin.

December to May.

Cornish Gilliflower.

*Court Pendu Plat.

January to June.

*Sturmer.

It may now be useful to give a few selections of Apples for various special purposes.

Apples that are Suitable for Cordons.

Beauty of Bath.

Beauty of Kent.

Cellini.

Chelmsford Wonder.

Colonel Vaughan.

Cox's Orange Pippin.

Cox's Pomona.

Frogmore Prolific.

Golden Spire.

Grenadier.

Hollandbury.

Hormead Pearmain.

Lane's Prince Albert.

Lord Derby.

Newton Wonder.

Potts's Seedling.

Royal Jubilee.

Stirling Castle.

Warner's King.



FIG. 36. APPLE DUCHESS'S FAVOURITE.

Apples for Profit.

The market grower must, of course, put aside individual preferences, and grow sorts which do well in his locality and which at the

* May be chosen to make up a collection of twelve.

same time are recognised market sorts. The following are well-known varieties:—

| | | |
|----------------------|-----------------------|---------------------|
| Beauty of Kent. | Ecklinville. | Manks's Codlin. |
| Bismarck. | Gascoyne's Seedling. | New Hawthornden. |
| Blenheim. | Golden Noble. | Potts's Seedling. |
| Bramley's Seedling. | King of the Pippins. | Stirling Castle. |
| Colonel Vaughan. | Lane's Prince Albert. | Warner's King. |
| Cox's Orange Pippin. | Lord Derby. | Wellington. |
| Domino. | Lord Grosvenor. | Worcester Pearmain. |
| Duchess's Favourite. | Lord Suffield. | Yellow Ingestrie. |

It is important to remember that under special circumstances a comparatively little known Apple will sometimes give better returns than a very popular one. As instances, I know one grower whose most profitable variety is Frogmore Prolific, another who gets the best results from Stone's, and a third whose mainstay is Waltham Abbey Seedling. The grower should keep both eyes and ears particularly wide open.

Apples that are Suitable for Training, or for Forming Small Bushes.

| | | |
|-----------------------|-----------------------|---------------------|
| Adams's Pearmain. | Cox's Orange Pippin. | Stirling Castle. |
| Bismarck. | Lane's Prince Albert. | Sturmer. |
| Braddick's Nonpareil. | Lord Grosvenor. | Worcester Pearmain. |
| Cellini. | Manks's Codlin. | Yellow Ingestrie. |
| Court Pendû Plat. | Potts's Seedling. | |

Apples that make Good Standards.

| | | |
|---------------------|-----------------------|-----------------|
| Beauty of Kent. | Domino. | Golden Noble. |
| Blenheim. | Duchess of Oldenburg. | Lord Derby. |
| Bramley's Seedling. | Ecklinville. | Lord Grosvenor. |
| Cox's Pomona. | Emperor Alexander. | Manks's Codlin. |

The last three lists could all be added to freely.

Apples that Thrive on Heavy Soil.

| | | |
|---------------------|-----------------------|--------------------|
| Beauty of Kent. | Duchess of Oldenburg. | Newton Wonder. |
| Bramley's Seedling. | Lord Grosvenor. | Wellington. |
| Domino. | Mère de Ménage. | Worcester Pearmain |



Chapter VIII.—Selections of Pears.

To speak of so popular a fruit as the Pear as neglected would perhaps be going too far, yet I cannot admit that it receives half or quarter the attention that it deserves. In view of the bold way in which Pears loom up at the great fruit shows it might be supposed that they are nearly as universal a fruit as the Apple. Nothing of the kind. Market growers ignore them almost to a man, and the average amateur often passes them by. The only place in which Pears have the position that their merits



FIG. 37. THE PROMISING NEW APPLE CHARLES ROSS.

deserve is in the private garden of the country gentleman. There collections are frequently—perhaps I might go so far as to say generally—met with, the selection is good, and the culture often excellent.

To judge by the rarity of Pears in small gardens, and by the price a buyer frequently has to pay for fruit in the shops, it might be supposed that trees cost something over a guinea each, require elaborate heated structures, and call for the attention of a highly trained specialist. Of course they are in reality as cheap and as easily grown as Apples. What often happens is that a person gets possession of a tender variety like *Marie Louise*, grows it in the open where a searching north-easter plays sportively around it for several weeks in late spring, and finds it die from mildew. He then raises a harrowing wail, and tells his friends that Pears will not thrive in the locality.

By choosing the right type of tree, managing it on simple lines, and making a wise selection of sorts, it is possible to have a supply of delicious fruit lasting for several months, two years after planting. And, remember,

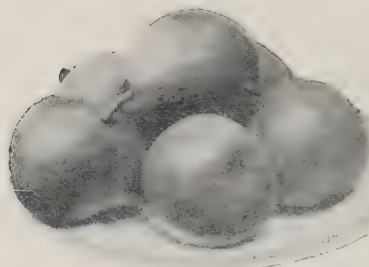


FIG. 38. PEAR DOYENNÉ BOUSSOCH.

go into a garden where Pears are well done without seeing some variety which I do not possess, and feel envious accordingly. Here, to begin with, are the fifty :—

Fifty Good Pears.

| | | |
|-----------------------|--------------------------|--------------------------|
| Seckle. | Catillac. | Marie Benoist. |
| Beurré d'Amanlis. | Jersey Gratioli. | Zephirin Gregoire. |
| " Clairgeau. | Ollivier de Serres. | Magnate. |
| " Hardy. | Winter Nélis. | Jargonelle. |
| " Superfin. | Bergamotte Esperen. | Easter Beurré. |
| " Rance. | Citron des Carmes. | Duchesse d'Angoulême. |
| " d'Arenberg. | Thompson's. | Madame Treyve. |
| " Capiaumont. | Marie Louise d'Uccle. | Chaumontel. |
| " de l'Assomption. | Doyenné du Comice. | Maréchal (Conseiller) de |
| " d'Anjou. | " Boussoch. | la Cour. |
| " Sterckmans. | Marguerite Marrillat. | General Todleben. |
| " Diel. | Fertility. | Fondante d'Automne. |
| " Giffard. | Nouvelle Fulvie. | Emile d'Heyst. |
| Triomphe de Jodoigne. | Louise Bonne of Jersey. | Marie Louise. |
| Souvenir du Congrès. | Josephine de Malines. | Williams's Bon Chrétien. |
| Brockworth Park. | Durondeau. | Glou Morceau. |
| Clapp's Favourite. | Uvedale's St. Germain's. | Conference. |

If we add to the above the following varieties, we have the material for forming several splendid collections :—

Gansel's Bergamot.
 Van Mons' Leon
 Leclercq.
 Hacon's Incomparable.
 Pitmaston Duchess.
 Passe Colmar.
 Knight's Monarch.
 Nec Plus Meuris.
 Princess.

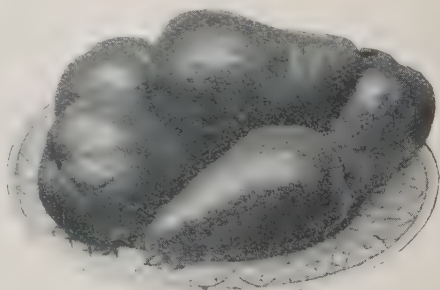


FIG. 39. PEAR DURONDEAU.

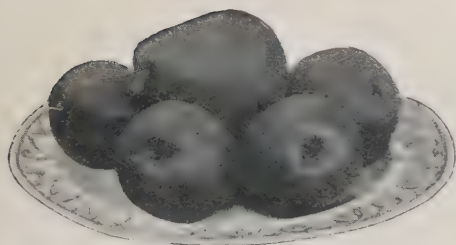


FIG. 40.—PEAR BEURRÉ HARDY.

12 Pears of Very Fine Flavour.

Beurré Superfin.
 „ d'Arenberg.
 Doyenné du Comice.
 Gansel's Bergamot.
 Jargonelle.
 Josephine de Malines.
 Knight's Monarch.
 Maréchal de Cour.
 Marguerite Marrillat.
 Marie Louise.
 Seckle.
 Thompson's.

Marie Louise and Maréchal de Cour will not thrive in cold places.

Pears suitable for Cordons, with their Seasons.

| | | |
|-------------------------------|-------------------------------|------------------------------|
| <i>July.</i> | †Maréchal de Cour. | <i>November to March.</i> |
| Citron des Carmes. | †Marie Louise. | Chaumontel. |
| <i>August.</i> | †Pitmaston Duchess. | <i>December and January.</i> |
| Beurré Giffard. | <i>November.</i> | †Glou Morceau. |
| *Jargonelle. | Beurré Clairgeau. | Knight's Monarch. |
| <i>August and September.</i> | *Thompson's. | †Zephirin Gregoire. |
| *Marguerite Marrillat. | Van Mons' Leon Le- | <i>December to February.</i> |
| Souvenir du Congrès. | clercq. | General Todleben. |
| *Williams's Bon Chrê- | <i>November and December.</i> | Marie Benoist. |
| tien. | Passe Colmar. | <i>January and February.</i> |
| <i>September.</i> | Triomphe de Jo- | *Josephine de Malines. |
| Beurré d'Amanlis. | doigne. | <i>January to April.</i> |
| *Clapp's Favourite. | <i>November to January.</i> | †Bergamotte Esperen. |
| †Doyenné Boussoch. | Hacon's Incompar- | Easter Beurré. |
| Madame Treyve. | able. | *Nec Plus Meuris. |
| <i>September and October.</i> | <i>November to February.</i> | <i>February and March.</i> |
| Beurré Superfin. | *Winter Nélis. | Nouvelle Fulvie. |
| †Fondanted'Automne. | | †Ollivier de Serres. |
| <i>October.</i> | | |
| Beurré Capiaumont. | | |
| * „ Hardy. | | |
| *Emile d'Heyst. | | |
| Jersey Gratioli. | | |
| *Louise Bonne of Jer- | | |
| sey. | | |
| †Seckle. | | |
| <i>October and November.</i> | | |
| Beurré Diel. | | |
| Conference. | | |
| *Doyenné du Comice. | | |
| †Durondau. | | |
| Gansel's Bergamot. | | |



FIG. 41. PEAR MARIE LOUISE.

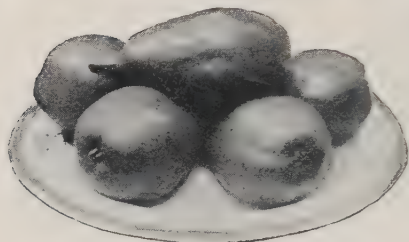


FIG. 42.—PEAR WILLIAMS'S BON
CHRÉTIEN.

If a selection of twelve is wanted from the above, choose those marked with an asterisk. If room can be found for a few more, add those marked with a dagger. Any of them would do for pyramids if the situation is not bleak.

The Best Pear Grown.
Doyenné du Comice.

Pears for Stewing.

A large number of Pears not specially grown for the purpose of the recognised varieties the

may be stewed if they do not ripen, but of the following are the best:—

October.

Grosse Calebasse.

January and later.

Uvedale's St. Ger-
mains.

*January, and perhaps a
year afterwards.*
Catillac.

Hardy Pears Suitable for Standards.

Beacon.

Beurré Capiaumont.

Fertility.

Hessle.

Jargonelle.

Jersey Gratioli.

Lammas.

Louise Bonne of Jersey.

Some of the Best Market Pears.

Beacon.

Beurré Clairgeau.

„ Capiaumont.

Conference.

Durondeau.

Fertility.

Hessle.

Lammas.

Pitmaston Duchess.

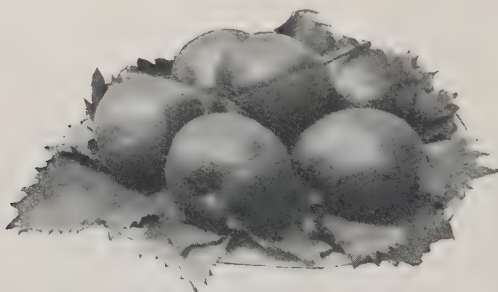


FIG. 43.—PEAR WINTER NÉLIS.

Chapter IX.—Selections of Stone Fruits.

APRICOTS, Cherries, Nectarines, Peaches, and Plums form a quintette of dessert fruits very difficult to excel in richness and variety of flavour. A sun-warmed Apricot, ripe and mellow from the tree, and with an evening

sky warmth of colour on its tawny skin, offers an enticing delicacy to the garden epicure. A plump, ruddy or swarthy Cherry, say of the variety Black Eagle, or Napoleon Bigarreau, or Elton, at once juicy and crisp, creates an appetite as little recking of the conventionalities as that of Oliver Twist. A Nectarine or a Peach, fresh softened on the wall, is a cup of Nature's own wine, giving a draught whose purity no alcohol-sodden system can fully



FIG. 44. —NECTARINE HUMBOLDT.

(See page 61.)

enjoy. A real dessert Plum, say Transparent Gage, or Golden Drop, or Denniston's Superb—what can be said of it save that it is a perfect sweetmeat, such as the Rahat Lakoum can never equal!

Happy is the man who can manage to grow a collection of all these fruits on his garden walls, and another in pots for an orchard house. We have seen how garden trees are trained and pruned, and later on we may see how pot trees are managed. For the present, let us give attention to the varieties.

APRICOTS.

It is rarely that a large collection of Apricots is grown; indeed, the fruit is not often represented by more than three or four varieties, even in large gardens. This state of affairs affords a great contrast to that connected with Apples, Pears, and Peaches.

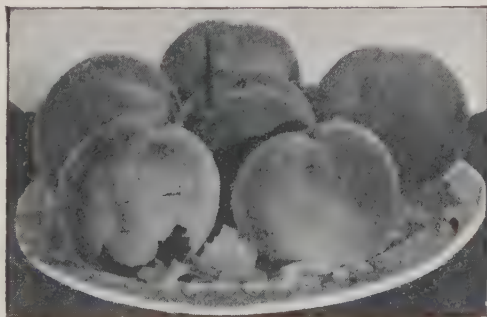


FIG. 45. —PEACH BARRINGTON.

(See page 62.)

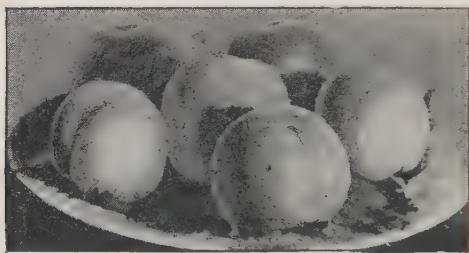


FIG. 46.—PEACH NOBLESSE.

(See page 62.)

Blenheim (Shipley's).
Breda.
Early Moorpark.
Frogmore Early.

Hemskerk.
Kaisha.
Large Early.

Here we have ten varieties. I can hardly imagine anyone requiring so many, and I will therefore sift them:

Three for walls.

Large Early.
Moorpark.

Powell's Late.

Two for exposed places.
Breda.

Blenheim.

One for an amateur.
Early Moorpark.

CHERRIES.

Here we have not only more varieties, but a more even balance of merit, so that selection becomes more difficult. Let us, following the previous plan, first of all get a few of the best sorts before us, and then choose from amongst them.

Some of the Best Cherries.

Archduke.
Bigarreau, Kent (Amber Heart).
Bigarreau Napoleon.

Black Tartarian.
„ Eagle.
Early Rivers.
Elton.

Governor Wood.
Kentish.
May Duke.
Morello.

Here we have just short of a dozen varieties, all possessing considerable merit, yet possible of reduction if all are not wanted. Let us classify them.

Four delicious dessert Cherries.

Black Eagle.
Early Rivers.
Elton.

Bigarreau Napoleon.

A Selection of two.

Early Rivers.
Bigarreau Napoleon.

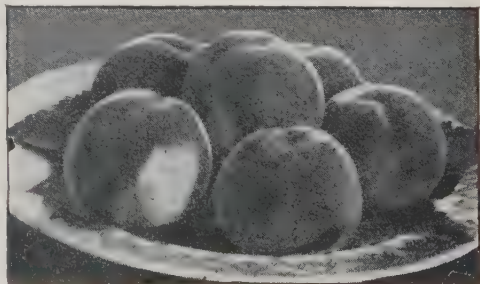


FIG. 47.—PEACH DYMOND.

(See page 62.)

A narrow field of selection has its advantages; it saves the beginner a great deal of weary plodding through long lists of selections by experts, all of which are the best, yet all different from each other!

The Best Apricots.

The following list comprises most of the best Apricots, and affords material for several good selections:

Moorpark.
Oullins' Early Peach.
Powell's Late.



FIG. 48.—PEACH WALBURTON ADMIRABLE.
(See page 62.)

One only.

Bigarreau Napoleon.

Three for succession.

Early Rivers.

Bigarreau Napoleon.

Black Eagle.

Three for market.

Bigarreau, Kent.

Early Rivers.

Kentish.

Two for cooking.

Kentish.

Morello.

NECTARINES.

This fruit is not, perhaps, open to all; certainly it is not every person who can indulge himself in a collection, and ensure a supply for many months by growing them under glass. Still, there is often a wall on which room may be found for two or three trees, if no more. The following list gives splendid material from which to choose:

Some of the Best Nectarines.

Advance.

Cardinal.

Dryden.

Goldoni.

Humboldt.

Lord Napier.

Newton.

Pine Apple.

Spencer.

Stanwick Elruge.

Victoria.

Violette Hâtive.

The man who can grow all the above has reason to congratulate himself, for they are a magnificent lot. Now to analyse the list:

Six for succession.

Cardinal.

Lord Napier.

Stanwick Elruge.

Humboldt.

Pine Apple.

Victoria.

Three for succession.

Lord Napier.

Humboldt.

Victoria.

Two for an outdoor wall.

Lord Napier.

Stanwick Elruge.

PEACHES.

In the whole range of fruits there is nothing more interesting than the Peach, and it is to be regretted that it is dying out as an open-air fruit. Two things have conduced to this: (1) cheap glass; (2) reductions of staff in gardens. It is natural that those who can afford a range of houses should have it, for the crop is sure, and a succession

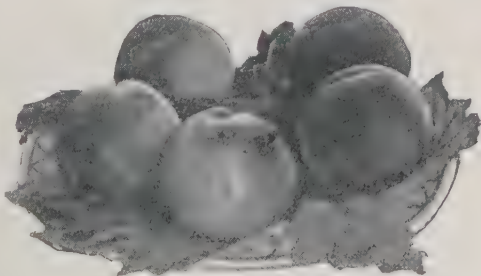


FIG. 49. PEACH CONDOR.
(See page 62.)

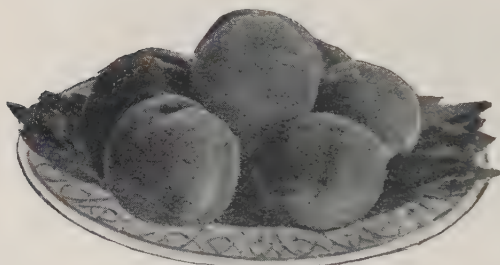


FIG. 50.—PEACH SEA EAGLE.

Condor.
Dymond.
Early Grosse Mignonne.
Gladstone.
Grosse Mignonne.
Six for succession.

Hale's Early.
Rivers's Early York.
Early Grosse Mig-
nonne.

Hale's Early.
Noblesse.
Rivers's Early York.
Royal George.

Royal George.
Sea Eagle.
Walburton Admirable.
Three for succession.
Hale's Early.

easily provided. At the same time it must not be forgotten that there are many examples left to prove that outdoor Peach culture is not a lost art, notably at Chiswick.

Some of the Best Peaches.

Alexander.
Amsden June.
Barrington.
Bellegarde.

Sea Eagle.
Stirling Castle.
Walburton Admirable.
Waterloo.

Grosse Mignonne.
Sea Eagle.
Two for outdoors.
Dymond.
Sea Eagle.

PLUMS.

Some of the choicest varieties of Plums rival the most delicious of dessert fruits in flavour, and it is a little to be regretted that collections of them are not oftener seen. There are hundreds of gardens in which the only Plum represented is Victoria. This is admittedly one of the grandest hardy fruits grown, but I cannot allow that it is good enough to represent the whole class, inasmuch as it is only suitable for cooking. Of course, it is eaten raw, but not by those people who have access to choice sorts. It will be well to set the Plums before us in two sections.

Some Good Cooking

Plums.

Autumn Compôte.
Belle de Septembre.
Cox's Emperor.
Diamond.
Early Orleans.
Gisborne's Prolific.
Monarch.
Pond's Seedling.
Rivers's Prolific.
The Czar.
Victoria.
White Magnum
Bonum.



FIG. 51.—PLUM TRANSPARENT GAGE.

(See page 63.)



FIG. 52.—PLUM MAGNUM BONUM.

(See page 62.)

One for preserving.

Gisborne's.

Four for market.

Early Orleans.

Gisborne's.

Rivers's Prolific.

Victoria.

The best for a standard.

Victoria.

Here we have twelve, and they must be reduced a little.

Six for cooking.

Cox's Emperor,

Gisborne's.

Monarch.

Rivers's Prolific.

The Czar.

Victoria.

Three for cooking.

Rivers's Prolific.

Monarch.

Victoria.

One early, one late.

Rivers's Prolific.

Victoria.

The best for a wall.

Victoria.

The best ever raised.

VICTORIA.

Some Good Dessert Plums.

Angelina Burdett.

Belgian Purple.

Blue Impératrice.

Bryanstone Gage.

Coe's Golden Drop.

Green Gage.

Jefferson's.

Kirke's.

Oullins Golden.

Purple Gage.

Reine Claude de Bavay.

Transparent Gage.

Washington.

A baker's dozen. Lucky the baker, or any other man, who has the whole thirteen.

Six in order of ripening.

Belgian Purple.

Denniston's Superb.

Green Gage.

Early Transparent

Gage.

Jefferson's.

Coe's Golden Drop.

Three in order of ripening.

Belgian Purple.

Early Transparent Gage.

Coe's Golden Drop.

Three Good Damsons in Ripening Order.

Farleigh Prolific.

Bradley's King.

Prune.

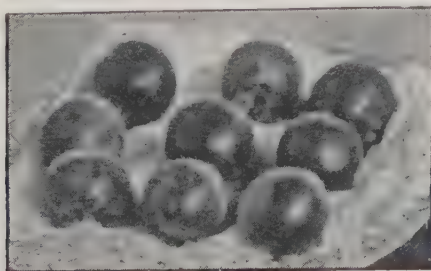


FIG. 53.—PLUM REINE CLAUDE DE BAVAY.

Chapter X.—Selections of Bush Fruits.

CURRENTS, Gooseberries, and Raspberries—for the last named may be classed amongst the bush fruits as a matter of convenience, and without seriously straining a point—do not give any serious trouble in selection, except perhaps to meet the case of the man, happily not often encountered, who wants the names of fifty or sixty Lancashire prize Gooseberries, with their colours.

Now the fruits named are everyday sort of things, very rarely taken much notice of, except when they are in bearing; but it is just as easy to grow good varieties as bad ones, and much more profitable; therefore, let us dissect the catalogues.

The Best Currants.

| | | |
|-------------------------|---------------------------|-----------------------------------|
| <i>Three good Reds.</i> | <i>Three good Blacks.</i> | <i>A good White.</i> |
| Comet. | Boskoop Giant. | White Dutch. |
| Raby Castle (Victoria). | Black Naples. | <i>Two good market varieties.</i> |
| Red Dutch. | Lee's Prolific. | Baldwin's. |
| <i>One good Red.</i> | <i>One good Black.</i> | Red Dutch. |
| Raby Castle. | Boskoop Giant. | |

The Best Gooseberries.

| | | |
|----------------------------------|----------------------------------|-----------------------------|
| <i>Five for gathering green.</i> | <i>Four for flavour.</i> | Catherina, yellow. |
| Crown Bob. | Bright Venus, white. | Dan's Mistake, red. |
| Keepsake. | Early Sulphur, yellow. | Leveller, yellow |
| Lancashire Lad. | Pitmaston Greengage, | London, red. |
| Whinham's Industry. | green. | Stockwell, green. |
| Whitesmith. | Red Champagne, red. | <i>A good sort for pre-</i> |
| <i>One for gathering green.</i> | <i>Six very large varieties.</i> | <i>serving.</i> |
| Whinham's Industry. | Antagonist, white. | Red Warrington. |

The Best Raspberries.

There are many Raspberries, but only a dozen or so are in general cultivation, and several of these are really hardly worth growing, considering how much superior two particular varieties are:—

| | | |
|-------------------------------|-------------------------|------------------------------|
| <i>Six of the best sorts.</i> | Superlative. | <i>A good autumn bearer.</i> |
| Baumforth's Seedling. | Yellow Antwerp. | October Red. |
| Carter's Prolific. | <i>Two of the best.</i> | <i>A good sort for pre-</i> |
| Hornet. | Carter's Prolific. | <i>serving.</i> |
| October Red. | Superlative. | Semper Fidelis. |

Canker References (see page 65).

A, part of the stem and branches of an Apple tree: *a*, portions of clean stem; *b*, an affected branch; *c*, diseased branches.

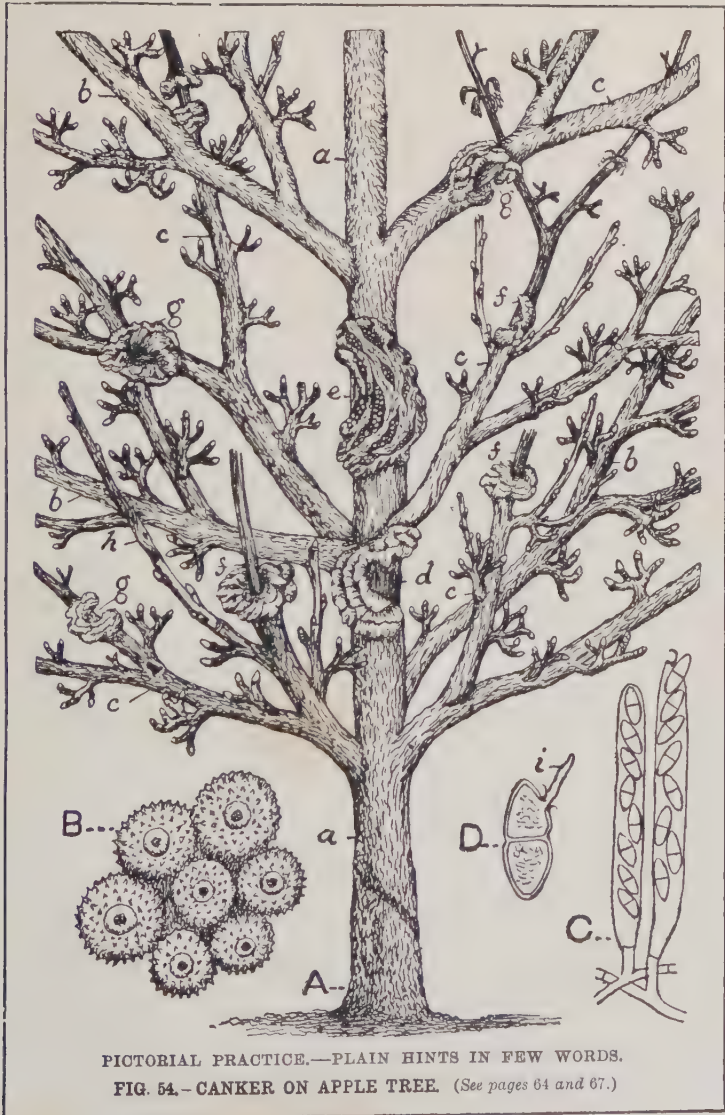
Canker on stem: *d*, wound with corticated bark surrounding the wound, but not giving visible sign of infection by parasitic organism; *e*, wound bearing in clefts of the bark at the circumference of the wound fruits of Canker Fungus, *Nectria ditissima*.

Canker on branches: *f*, completely girdled, and parts above the wounds killed, young growths pushed from healthy parts below points of attack, but the parasite is still existent in the bark below the dead parts of the branches; *g*, wounds on branches, but not to the extent of girdling them; *h*, shoot killed in the year of attack.

B, fruits (perithecia or spore capsules) enlarged 25 diameters.

C, asci or bladders of Fungus with spores, magnified 250 times.

D, spore of Fungus: *i*, germinal tube, enlarged 650 diameters.



Chapter XI.—Fruit Enemies.

A NURSERY foreman once remarked to me, in a plaintive and piteous way, that there appeared to be a special provision of Nature for fruit trees to be harassed and attacked at all stages of their annual round. There was, he pointed out, a foliage foe at hand directly the first tinge of green showed itself; there was a blossom enemy armed for action as soon as the trusses unfolded; and there was a fruit antagonist eager for mischief as soon as the fruit had set.

Alas! it is too true that cultivated fruits are beset with assailants. Whatever kind we grow there is something provided for attacking it; and be the circumstances what they may, there is no such thing as complete immunity. Some enemies attack all sorts of fruit trees indiscriminately, and as a rule their efforts are supplemented by those of other pests peculiar to each class of tree. Harassed growers are sometimes inclined to rail at perverse Nature, but in the long run it will pay to exhibit disapproval in a more tangible form, *i.e.* with washes, insecticides, and sprayers.

The best cultivated tree is generally the least affected, and it may be taken as an axiom that high culture is a direct means of keeping insects and fungi in check; but it is vain to hope that everything can be accomplished with spade, manure, and pruning tool. There will have to be a certain amount of special effort, and the wise grower will always have an item on the debit side for insecticides.

I propose to make a few remarks on the principal fruit enemies under two heads: (1) general enemies, which usually attack more than one kind of fruit; (2) pests that, as a rule, are peculiar to one sort.

GENERAL ENEMIES.

American Blight.—A persistent and troublesome enemy, but one which ought not to do a tithe of the damage it causes, inasmuch as it flaunts itself before the eyes of the grower in the form of thick white patches, which rapidly spread from shoot to shoot until the tree possesses quite a wintry aspect. Left to itself, this pest does damage both directly and indirectly. Its own individual operations cripple the tree, and, moreover, it predisposes to canker. If American blight were kept under there would not be half the loss from canker which now takes place. The enemy, like nearly every other, fails to become formidable if attacked on its first appearance. Half an hour with a camel hair brush and a small bottle of methylated spirit or petroleum sometimes saves days of irksome labour. The liquid should be carefully applied. To plaster it all over the tree would mean destruction to the latter. Take care that the application is so made that the bodies of the insects serve as a buffer between the brush and the tree. Only a careless operator will do harm. Where an attack has developed to proportions rendering small measures impossible, wash No. 1 may be selected from the list on page 78.

Aphides.—A large and prolific family, sporting a variety of colours but only one form of appetite. The "black fly" of Peaches, the "dolphin" of Beans, the "brown fly" of Plums, the "green fly" of scores of crops—fruit, vegetable, and flower—belong to this ancient house. Fortunately

they are easy to kill; and if cultivators would only remember the old proverb that "a stitch in time saves nine," which is sound sense, if faulty rhyme, there would be trifling loss. So simple a remedy as 1 oz. of washing soda dissolved in 1 gallon of water and applied at 150°, is enough, but No. 4, page 78, may be resorted to in case of emergency.



FIG. 55.—WINGLESS APHIDES, MAGNIFIED.

Suffield. It is important to remember that a variety which is very little affected in some districts is very badly attacked in another, where the soil is different—probably heavier. As an instance, Lord Suffield thrives in many parts of Kent, notably in the Swanley district. Yet I know an orchard on clay in East Kent in which every tree is cankering to death. The culture is good, and other sorts succeed, but Lord Suffield is a rank failure. Instances of this sort are instructive, for they show what a number of side issues there are in fruit growing. I shall give special attention to this matter when I come to make my selections.

What is canker? It is a fungus, and its name is *Nectria ditissima*. Does it pierce healthy bark, extract juices from the sap vessels, and so cripple the tree? No, it waits until it finds a joint loose in the bark armour, then thrusts in its germinal tube, and establishes itself. It spreads under the bark, and the latter becomes unhealthy. An experienced eye can tell when a tree is "going to canker"—as a matter of fact, it is already cankered—by the appearance of the bark, which becomes swollen and chippy some time before a large wound is seen. The fungus throws up propagating growths in autumn and early winter, and the faster it increases the more unhealthy the bark becomes. The wound *d* nearly halfway up the tree *A* in the figure on page 65 is a typical one. A great deal of bark has died away altogether, leaving the smooth inner wood exposed; there is also dead bark. Usually the latter is associated with rolls of clean, healthy-looking growth. Good and bad influences are at work here. The fungus is attempting to girdle the stem so that it may die; the tree is endeavouring to cover the exposed area with new tissue so that it may live.



FIG. 56.—BLACK APHIDES, WINGED AND WINGLESS, MAGNIFIED.

Higher up, at *e*, is seen another wound with the canker fruits showing, and at various points on the side branches other wounds may be seen.

It will be well to glance at a few causes of canker before coming to remedies. In my opinion there are three which eclipse all others, and I will place them in what I consider to be their order of infamy:—

1. Unsuitable soil, either from poverty or peculiarity of variety.
2. Predisposing injury by aphides, birds, or man.
3. Rubbing by crossed branches.

If the soil in which fruit trees are grown were systematically cultivated and manured (see previous chapter), there would be two-thirds less canker than there is now; and if growers were careful in choosing varieties the proportion of unhealthy trees would be still less.

It is impossible to prevent all external injury to fruit trees, but by keeping down aphides and exercising care in handling at planting and pruning time the damage is reduced to a minimum. It is quite possible to avoid all injury by branch-rubbing (see "Pruning").

Can canker be cured when it has got a firm hold? This is a question that is usually answered in the negative. Personally, I protest against so swift a surrender of the position. It is easy, of course, to "let things slide," but it is not very profitable, nor altogether creditable either. There are doubtless cases in which the enemy is master of the situation, but there are certainly a great many others in which he could be met and defeated.

If a fruit grower has a number of trees which canker badly, and they prove to be of one or two particular varieties, he will be justified in concluding that the soil does not suit those sorts. If the trees are old the best thing will be to get rid of them; if they are young he may graft them with a stronger sort (see chapter on "Grafting"). In Nottinghamshire I have seen trees of Ribston Pippin, so badly cankered that the trunk was nearly girdled, brought back to health and vigour by grafting them with the strong and hardy variety Bramley's Seedling. The great gaping wounds on the bole have completely healed.

Where canker is pretty general, affecting nearly all the varieties, it is safe to assume that there is something wrong with the soil. It is perhaps undrained; or it is poverty stricken. Want of drainage accounts for an enormous amount of loss from canker. Fruit plantations on a slope are usually drained naturally; but on a plateau, or in a valley, pipes are frequently wanted. If pipes are laid 30 inches deep in strong land, and the soil above is bastard trenched and winter ridged, the ground will be so much warmer, sweeter, and more fertile that the trees are bound to be benefited. If the soil is poor it should be fed in the way described in a

APPLE AND PEAR SCAB (see pages 69 and 79).

- A*, small scabbed Apple, natural size, showing *a*, black spots; *b*, depressed brown or black patch with cracks; *c*, point of advance by Fungus, prostrate hyphæ or mycelium beneath the skin of fruit.
- B*, section of a bit of the fruit tissues where the skin was broken through by the Fungus, showing *d*, skin (epidermis) turned up; *e*, spores of Fungus (*Fusicladium dendriticum*) in position; *f*, mycelium of Fungus; *g*, cells of Apple.
- C*, leaf of Apple tree, natural size, showing *h*, black dots and blotches caused by Fungus.
- D*, Fungus broken through membrane of Apple tree leaf: *i*, spores; *j*, mycelium.
- E*, small scabbed Pear, natural size, showing depressed patch caused by Fungus, with scabbed places where this has broken through the skin.
- F*, the Pear Scab and Cracking Fungus, *Fusicladium dendriticum* or *pyrinum*: *l*, spores; *m*, mycelium.

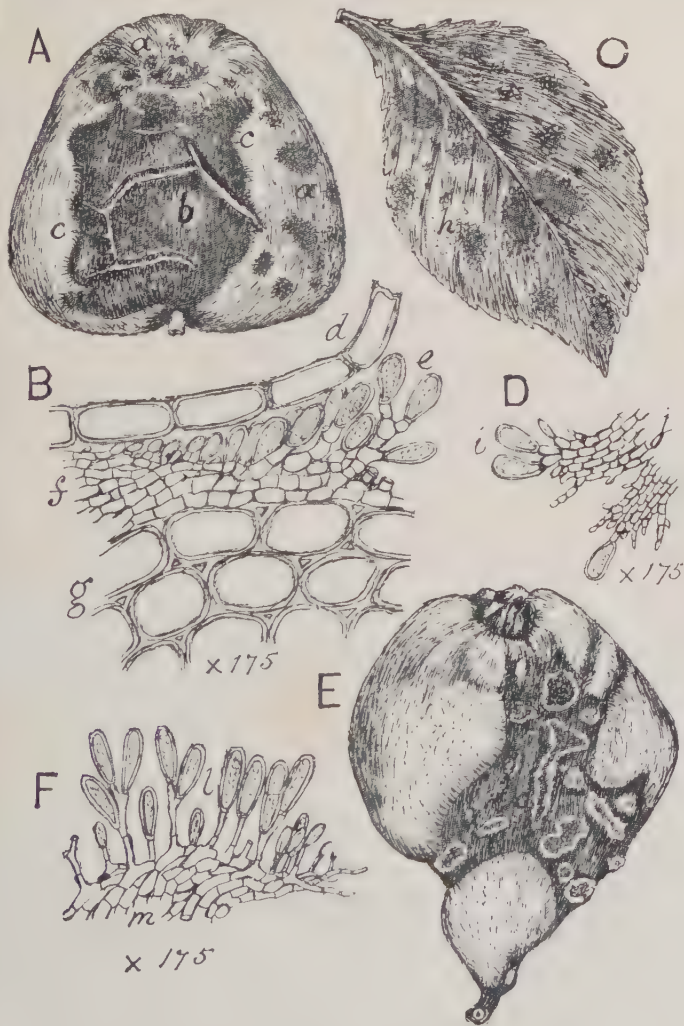


FIG. 57.—APPLE AND PEAR SCAB.

(For References see page 68 ; for Remedies see page 79.)

previous chapter. I have often known so simple a thing as a coat of manure check canker.

In the early stages of the disease much good may often be effected by cutting out the diseased portions with a sharp knife or chisel, and then dressing with Stockholm tar. I have thus operated on hundreds of trees, and while on the one hand I have never seen a solitary instance of injury accrue, I have in many cases known direct benefit follow. Every particle of diseased and unwholesome-looking tissue should be cut out, and the Stockholm tar (which may be purchased quite cheaply at any gasworks) applied with an ordinary paint brush.

Gum.—This disease is common to the three principal stone fruits—Plums, Cherries, and Peaches. Supporters of own-root fruit trees have an argument in their favour here, for “worked” (*i.e.* budded or grafted) trees are, I have observed, the likeliest to go off. Experience among the extensive stone fruit orchards of Kent teaches me that there is more vigour and longevity among natural than worked trees. The drawback to the former is that they are much longer becoming fruitful than worked trees, and we cannot do without these.

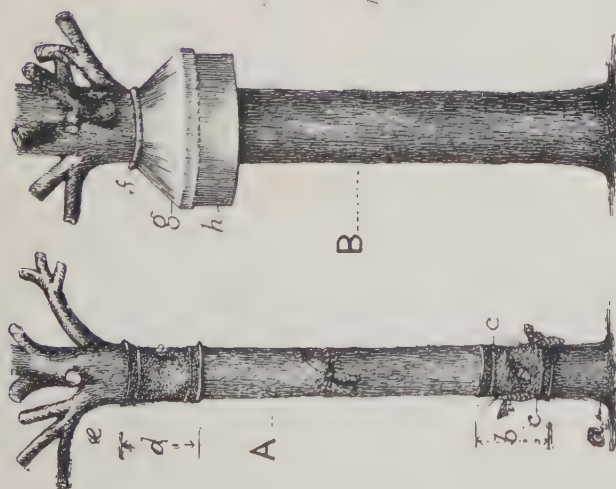
Young trees that become badly affected should be removed and destroyed. Isolated branches or shoots of larger trees may be cut out and burnt. When, however, a tree of some years’ standing gums badly, and then throws out clusters of stem shoots—the two things accompany each other too often to be without connection—get another ready; it will be wanted. Growers must not be misled on the score of fertilisers. In the case of gum they often represent a waste of money, aggravating rather than relieving the malady. A strong and hardy rootstock is the thing to aim at.

Lichen and Moss.—These are enemies, and serious ones, though not insects. By rendering the tree foul they greatly impair its health. The Californian wash of caustic soda and pearlash, No. 11 in the list of washes on page 79, will be found the best remedy; and with a preliminary scraping by means of a piece of hoop iron even bad cases may be cured. It should, however, always be remembered that lichen and moss are much the worst in cold, undrained soil.

Mealy Bug.—Gardeners dread this pest, and well they may, for if once it gets a firm hold it is most difficult to get rid of. An early attack is of the greatest importance. Vigorous syringing is very good practice, for so simple a thing as cold water has its effect if applied hard and often. As an insecticide, see No. 5, page 78.

Red Spider.—This tiny pest causes trouble with more than one class of fruit, both under glass and in the open. It worries the Grape grower, and gives the Gooseberry cultivator many an anxious hour. It thrives in an arid atmosphere, and does its worst when the plants which it is attacking are in difficulties owing to drought. Moisture is a great help in keeping red spider in check. With a moist, buoyant atmosphere under glass it has very little encouragement to spread. In the garden a deeply worked soil, kept loose on the surface, is of advantage, because it holds moisture. Mulchings of manure are also good. For a wash, see No. 5, page 78.

Scab.—This fungus attacks both leaves and fruit. As in the case of so many other pests, the encouragement of healthy, wholesome, vigorous growth is the best preventive. Should the disease appear, attack it early with No. 7 or No. 8, page 79.



REFERENCES.

(See also, page 122.)

A, *Just* (to get) standard apple tree, stem double-headed; a, collar of tree, or junction of stem with soil, sometimes called collar; b, line a band of good paper, secured with wire; and upper edges with string; c, the whole surface secured with wire; grass or earth raised to fit mouth-moths and other climbing insects; d, upper head; e, base of head or junction of branches from stem.

B, *Twisted* (to get) standard apple tree, stem of tree, or junction of stem with soil, sometimes called collar; f, line a band of good paper, secured with wire; and upper edges with string; g, the whole surface secured with wire; grass or earth raised to fit mouth-moths and other climbing insects; h, upper head; i, base of head or junction of branches from stem.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 58.—STICKY BANDING FRUIT TREES TO CHECK WINTER MOTH.

Scale.—There are several forms, all dangerous. Limewashing the trunks of trees (No. 2, page 78) is a good and inexpensive plan. As destroyers, try (1) dabbing with a small brush dipped in methylated spirit, (2) syringing in winter with water heated up to 160° to 180°, (3) "soaparite," No. 1, page 78. With respect to (1), the plan is only suitable to small infestations and careful workers.

Thrips.—A particularly lively and troublesome enemy, attacking a great many different crops. A splendid remedy will be found in No. 6, page 79. In this and every other case attack the pest before it has assumed overwhelming proportions.

In the following list of the principal pests attacking the different fruits no pretence is made to give an elaborate essay on each, but concise hints are given embodying preventives and remedies.

APPLE ENEMIES.

The Blossom Weevil (*Anthonomus Pomorum*).—The weevil bores a hole in a closed bud and lays an egg; the maggot feeds on the bud and turns to a chrysalis there. (1) Open out the trees and encourage the rapid opening of the buds. (2) Remove and burn all loose strips of bark in winter, then limewash. (3) The sticky bands referred to under Winter Moth will probably stop some of the female moths. (4) Spray or syringe when the trees are in bud with No. 3, page 78.

The Sawfly (*Tenthredo testudinea*).—The caterpillar resulting from this fly is light brown, having three pairs of claw and seven of sucker feet, $\frac{1}{2}$ inch long. Eggs are laid in the blossoms in May, and holes eaten in the fruit by the caterpillars, which emerge and enter the ground when the fruit falls. (1) Spread lime on the surface soil, and lightly fork it in. (2) Destroy all worthless fallen fruit. (3) Apply the Paris Green spray No. 3, page 78, before the fruit turns down in spring.

The Winter Moth (*Cheimatobia brumata*).—Eggs are laid on the stems, about the spurs, and at the points of the young shoots. Caterpillars hatch with the mild weather of spring, and feed on the breaking buds. (1) The application of sticky bands is becoming unpopular, yet it has something to recommend it. In one small orchard I counted, one mid-December day, thirty of the greyish spidery female moths captive, and there were plenty more left when I got tired of counting. The following rules should be observed: To get paper that is greaseproof; to use fairly deep bands, say 9 to 12 inches; to tie with two strings, one at the top and one at the bottom; and to prepare a grease that, on the one hand, does not run, and, on the other, does not dry quickly and set. I have had successful results from sheets of butter paper purchased for a copper or two at the grocer's, and dressed with cart grease partially liquefied with palm oil. All these articles are easy to get and very cheap. Do not let the middle of November pass before the bands are put on. (2) The Paris Green solution, No. 3, page 78, may be sprayed on in spring. Take care to mix the stuff thoroughly, and to put it on in a fine, dew-like shower. (3) Pruning after Christmas results in many eggs being destroyed, and where convenient this cutting should be practised. In many cases labour considerations, I am aware, prevent the practice, which, however, is good.

Codlin Moth (*Carpocapsa pomonella*).—Visits to many orchards (not, alas, excepting my own) convince me that this is far the worst enemy which has had to be dealt with during the past few years. I have seen



FIG. 59.—THE LACKEY MOTH AND CATERPILLAR, SHOWING EGGS ON TWIGS.

(See page 74.)

hundreds of pounds' worth of fruit destroyed by it. In most instances the grower looked on, complaining, but doing nothing. The mischief is done by a small caterpillar, whitish, with brown head, hairy, having three pairs of claw and five of sucker feet, which results from an egg laid in the eye of the fruit late in spring. On hatching, the grub eats its way into the fruit, which eventually falls. (1) Remove and burn loose bark in winter; (2) limewash, or scrub with "soaparite," page 78; (3) rigorously destroy all worthless fruit as it falls. Usually it is left lying, which is bad. (4) Spray with Paris Green, No. 3, as previously recommended, before the setting fruit turns down. The grub then dies as it feeds.

Small Ermine Moth (*Hyponomeuta malivorella*).—Although this is not an everyday pest, a wrecked orchard I saw in the Midlands taught me what it can do if allowed to have its way. The caterpillar, which is ash coloured and spotted with black, appears in spring from eggs laid in patches and gummed to the twigs. It and its companions live in web tents among the leaves. (1) Brush away and destroy the webs at first sight, so saving future trouble; (2) give the trees a vigorous shaking, and destroy any fallen caterpillars.

The Lackey Moth (*Bombyx neustria*).—The caterpillars of this moth, which I have found on Pears as well as on Apples, result from eggs laid in rings round the young shoots and attached by a dark, pitch-like substance. They sport a variety of gay colours, and live in large webs, or may be seen swinging by their threads. (1) Speaking from experience, much the best way of dealing with the Lackey is to look out for the egg patches at pruning time, cut off the twigs, and burn them. As a rule, a great number are not found in each tree, and consequently the labour is not great. When, however, it is remembered that each patch may yield a large number of caterpillars it is seen that the work is worth doing. (2) An old broom intelligently wielded facilitates the removal of many swinging caterpillars.

APRICOT ENEMIES.

Branch Decay.—There is more loss from this trouble than from the attacks of insects. See "Varieties" in a previous chapter, also "Gum." No wash will stop the evil. I think that it is less marked when the roots are undisturbed under a pavement than it is in cultivated borders. Apricot growers ought to remember that this fruit greatly resents root disturbance.

The Moth (*Tortrix angustionara*).—The small greenish yellow caterpillar of this moth, appearing in the spring, causes the leaves to curl. (1) The only real remedy then is hand work, which in the case of extensive cultures is costly. (2) Where the trouble has existed in previous seasons spray with Paris Green, No. 3.

CHERRY ENEMIES.

Slug-worm (*Selandria atra*).—I have had much trouble with this pest, which is also common on the Pear. The blackish blobs, thickened at one end, are frequently abundant in summer. (1) Where a few wall trees are concerned not much damage need be done, as during the morning walk round the garden the slugs may be crushed between bits of flat wood carried in each hand. (2) In the case of larger trees two or three dustings of lime, repeated at intervals of a few days, are effectual.

Mottled Umber Moth (*Hybernia defoliaria*).—The brown, yellow

striped looper caterpillar of this moth appears in spring, attacking the foliage and young fruit. (1) Smear a hayband with tar and twist round the base (not on the trunk) of the tree. (2) Occasionally shake the trees. (3) In bad infestations spray with Paris Green, No. 3, page 78.

Black Fly.—See "Aphides."

Winter Moth.—See "Apples."

CURRANT ENEMIES.

Black Currant Gall Mite (*Phytoptus Ribis*).—The ravages of this pest, long serious, are becoming more so every year. Among many examples of its work I may quote one in East Kent, where about 8 acres of Currants were completely ruined by it. The mite appears to be most capricious in its attacks. Sometimes it affects one variety and leaves another alone; in other cases the position as to sorts is reversed. Again, it usually spreads from bush to bush when established; yet I have known it to attack and destroy several bushes, then disappear, leaving those around untouched. Unhappily the latter instances are not common. The mites are exceedingly minute objects, and they become ensconced in the buds, which lose their conical shape, becoming broad, cupped, and scaly. I have seen traces of attack in November, and from that time onwards through the winter the swollen buds become more numerous. To acquire familiarity with the enemy slice open a distorted bud and place it under a microscope. Remedies: (1) Directly swollen buds are seen pick them off and burn them, or cut off the twig and put it on the fire. (2) If the evil has spread without the grower observing it and a whole bush is affected, burn it bodily. (3) Do not plant another Currant on the same spot, even if lime has been dusted about and pointed in. I have known it done, and the new bush was soon as bad as the old. (4)



FIG. 60.—THE MAGPIE MOTH.

(5) After removing twigs in a small infestation spray the bush with the red spider solution, No. 5, page 78. (6) Allow fowls the run of the orchard. (7) From observing that in years when we have a heavy July rainfall the damage from this pest is less than in dry seasons, I am inclined to think that if a vigorous hosing were possible a few times in summer, when the insects are on the foliage, good would be done. (8) It has been suggested that the mites may be killed in the buds by enclosing a few bushes in a large, airtight sheet during winter, placing inside a vessel containing 4 oz. each of water and sulphuric acid, and dropping in very carefully $1\frac{1}{4}$ oz. of cyanide of potassium. The experiment might be tried, but the aspirant for knowledge and healthy Currant bushes will do well to keep on the outside of the sheet himself. (9) Cut the old wood out vigorously, and feed the bushes to encourage them to throw up plenty of new wood.

Magpie Moth (*Abraxas grossulariata*).—The creamy, black dotted, looper caterpillar of this moth appears in summer from eggs laid on the leaves, and at once attacks the foliage. (1) Dust with sharp soot when

the shoots are dewy. (2) Dust with common black pepper. (3) Skim off the top inch or two of soil, char and replace.

Sawfly.—See "Gooseberries."

Woolly Scale.—See "Scale."

GOOSEBERRY ENEMIES.

Sawfly (*Nematus Ribesi*).—This too familiar enemy only wants to be left alone to strip the bushes. I have seen them leafless by the middle of summer. Eggs are deposited on the leaves in spring, and the caterpillar soon hatches. Its green, black dotted, ravenous body is known to nearly every Gooseberry grower. (1) Dustings with white Hellebore powder are good, but this poisonous substance is sometimes used in a dangerously reckless way. Put a little in the palm of the hand, place the latter beneath the bush, and give a sharp jerk upwards. Syringe vigorously a day or two afterwards. (2) Boil 1 lb. of soft soap in 1 quart of water, stir in $\frac{1}{2}$ pint of paraffin, mix in 6 gallons of water, and spray on. (3) Dust with black pepper. (4) Skim off and char the surface soil or dress it with weathered gas lime. (5) Dust with soot while the leaves are dewy.

Magpie Moth.—See "Currants."

Red Spider.—See "General Enemies."

NUT ENEMIES.

Weevil (*Balaninus Nucum*).—This weevil, boring a hole in the shell when the nut is young, lays an egg from which a maggot hatches, and the latter feeds on the kernel, afterwards making its way to the soil. (1) If possible, avoid contiguity to Hazel clumps. The worst attack I have seen was near a copse full of Hazel. The weevil flies from one to the other. (2) Sprinkle lime beneath the bushes.

PEACH, PEAR, AND PLUM ENEMIES.

Peach Blister (*Exoascus deformans*).—A fungus, which rarely gives trouble except when the plants have been subjected to sharp winds. An east wind blowing through an open ventilator will often cause a certain area of an otherwise healthy tree to become affected by the reddish swellings. (1) Avoid draughts, sharp wind, or cold air. Without this no treatment will avail. (2) If the disease appears gradually remove the worst affected leaves and encourage fresh growth. Spray with No. 7 or 8, page 79.

Weevils.—See "Raspberries."

Black Fly.—See "Aphides."

Cracking of Pears.—See "Scab."

Canker.—See preceding remarks.

Slug-worm.—See "Cherry."

Winter Moth.—See "Apple."

Lackey Moth.—See "Apple."

Plum Aphis (*Aphis Pruni*).—A very prolific and troublesome pest. Eggs are laid in myriads in autumn, judging by the fact that I have found ring upon ring of them laid round the spurs and about the tips of the young shoots in November and onwards. (1) Late pruning clears off vast quantities if the shoots are burnt. (2) See also Aphides. The quassia solution, No. 4, page 78, is good.

RASPBERRY ENEMIES.

Clay Coloured Weevil (*Otiorhynchus picipes*).—There are several species of *Otiorhynchus* weevil, notably *O. sulcatus*, the black weevil of Vines, and *O. tenebriocosus*, the red legged weevil of Peaches and many other plants; but the clay coloured species is the one with which I have had most to do. And he is quite enough. He is absolutely the most difficult of all garden pests to destroy, being remarkably tough, and having a truly feline tenacity of life. A harassed Raspberry grower once showed me a collection of weevils in a bottle of paraffin, averring that they had been there three weeks, and were subsisting on the liquid. I cannot vouch for the time, but I can for the petroleum and the weevils, which were alive and vigorous. I have seen acres of Raspberries half ruined by them. The Raspberry weevil is a little more than $\frac{1}{4}$ inch long, and has a vicious and resolute air. I have known it go from Raspberries to Peas and attack them. No application that will not kill the plant will destroy the weevil. There is but one plan out of many tried which I have seen really effectual, and that is for two persons to go amongst the rows at night, each carrying a piece of tarred board, which, when ready for action, he holds sloping upwards from the base of the canes. A lantern is then flashed on to the Raspberries, which induces the weevils to fall. Or the canes may be shaken.

Red Bud Caterpillar (*Lampyris rubiella*).—This small red, black-headed caterpillar is a troublesome pest, though not so bad as the weevil. So far as my personal investigations go, it feeds only in spring; so that, although damage may be done by it, the plant has a chance to make fresh growth. Not so with the weevil. Unlike the latter, the red bud caterpillar is a day feeder. (1) Except where the culture is extensive, hand-picking or crushing suffices. (2) Dustings of sharp soot are good.



FIG. 61.—RED SPIDER, MAGNIFIED.

(See pages 70 and 78.)

STRAWBERRY ENEMIES.

Green Chafer.—It has happened, not infrequently, that large grubs have been brought to me as cockchafers, and charged with attacking Strawberry blossom, from which they are alleged to have eaten the organs of fructification. I have never known the cockchafer do this; he is a troublesome pest to many crops, but usually does his evil work at the roots. The enemy has in each case proved to be the green chafer. Like the cockchafer, he is a powerful fellow and difficult to get rid of. The best chance comes when a new bed is made, as then the ground can be thoroughly forked over and cleansed. As a temporary measure, raking the grubs out and destroying them is the only real remedy.

Mildew.—Large growers often have much cause to complain of loss from mildew. The better the culture the less troublesome the disease—witness the comparatively little damage done in private gardens. I do not

wish to infer that large growers are necessarily bad cultivators, but it is obvious that the farmer cannot give such high culture to many acres as the gardener can to a few rods. For remedies see Nos. 7 and 8, page 79.

REMEDIES FOR INSECTS AND FUNGI.

I now propose to give a list of recipes for insecticides and fungicides. I have tried each one before admitting it, and proved it to be efficacious. The various washes will be found to provide material for attacking all the major and many of the minor pests of the fruit garden. I may, however, point out that every practical grower has made one discovery, if no more—namely, that to give an insecticide or fungicide a chance of doing its work it must be brought into play in the first stage of the enemy's attack.

Several of the names given are coined ones. I am of opinion that they might be generally adopted with advantage.

No. 1.—Soaparite.

| | | |
|------------------------|--------------------------|---------------------------|
| 1 lb. of soft soap. | { Boil well for half | { Pour the mixture into a |
| 1½ pint of soft water. | | |
| ½ pint of paraffin. | { Stir in above directly | { gallons of water, and |
| | | |

Useful for keeping American blight, scale, and aphides in check. Apply in the evening.

No. 2.—A Good Lime Wash for Fruit Trees.

| | | |
|---------------------|---|-----------------------------|
| 8 lb. of lime. | { | Mix and paint on the stems. |
| 1 lb. of soft soap. | | |
| 4 gallons of water. | | |
| A little size. | | |

No. 3.—Paris Green.

| | | |
|-----------------------------|---|--|
| 1 oz. of Paris Green paste. | { | Thoroughly mix and keep the mixture vigorously stirred while in use. |
| 2 oz. of soft soap. | | |
| 12 gallons of water. | | |

Good for checking the winter moth, codlin moth, and other caterpillars.

No. 4.—Quassia.

| | |
|-------------------------|-------------------------------|
| 1 lb. of quassia chips. | { Soak for 8 hours and apply. |
| 10 gallons of water. | |
| or | |

| | |
|-------------------------|-------------------------------------|
| 1 lb. of quassia chips. | { Boil well in 10 gallons of water. |
| ½ lb. of soft soap. | |

Quassia extracts are good for all sucking insects, such as fly, but not for caterpillars.

No. 5.—Sulpharite.

| | | | |
|---------------------------------|--------------------|---|-----------|
| 1 lb. of lime. | { Boil in 3 quarts | { Well stir the lime and sulphur solution into the soaparite and apply hot. | |
| ½ lb. of sulphur. | | | of water. |
| 8 gallons of soaparite (No. 1). | | | |

Good for eradicating red spider after the leaves have fallen, also for American blight.

No. 6.—Tobacco Solution.

| | | |
|----------------------------|---------------------------|--|
| 2 oz. of soft soap. | } Thoroughly dissolve. | } Mix and apply at a temperature of 120°. |
| 1 gallon of boiling water. | | |
| 4 oz. of tobacco. | | |
| 1 gallon of boiling water. | | |

Soak several hours, strain, and leave to cool.

An excellent mixture for checking thrips.

No. 7.—Sulpotide.

| | |
|---|-------------|
| 1 oz. sulphide of potassium (liver of sulphur). | } Dissolve. |
| 3 gallons of water. | |

No. 8.—Carbam.

| | |
|---------------------------------------|--|
| 1 oz. of carbonate of copper. | } When the copper is dissolved, mix with 10 gallons of water. |
| $\frac{1}{2}$ pint of liquid ammonia. | |

Both this and No. 7 are good for scab and mildew.

No. 8a.—Bordeaux Mixture.

| | | |
|---|--------------------------------------|---|
| 2½ lb. of sulphate of copper (bluestone). | } Dissolve in a little hot water. | } Pour together when cool; stir the treacle or soft soap (I have used both with equally good results—the object is to make the mixture sticky) well in, and make up to 25 gallons with water. |
| 2½ lb. of freshly burned lime. | | |
| 1 lb. of agricultural treacle, or | | |
| 1 lb. of soft soap. | | |

Good for many fungoid pests.

No. 9.—Soap and Sulphur.

| | | |
|-----------------------|--|--|
| 2 oz. of soft soap. | } Thoroughly dissolve in 1 gallon of hot water. | } Boil together for half an hour, and apply warm. |
| 1 oz. of soda. | | |
| 1 handful of sulphur. | | |

Stir in the above.

A good remedy for red spider.

No. 10.—To Prevent Hares Barking Fruit Trees.

| | |
|-------------------------------|--|
| A wineglass of spirit of tar. | } Add the spirit of tar to a pailful of the paste, and daub on the trunks. |
| Clay. | |
| Lime. | |
| Cow manure. | |

Mix together to form a paste.

No. 11.—Sodash.

| | | |
|---|--|--|
| 5 lb. of caustic soda. | } Dissolve in a tub, pouring the water carefully down the sides. | } Mix, and add sufficient tepid water to make up 50 gallons, stirring in 2½ lb. of soft soap. |
| 5 lb. of pearlash (com- mercial potash). | | |

Dissolve in another tub.

Good for cleansing tree trunks of moss and other foul growth. Keep it off the hands and clothing.

Chapter XII.—Blackberries.

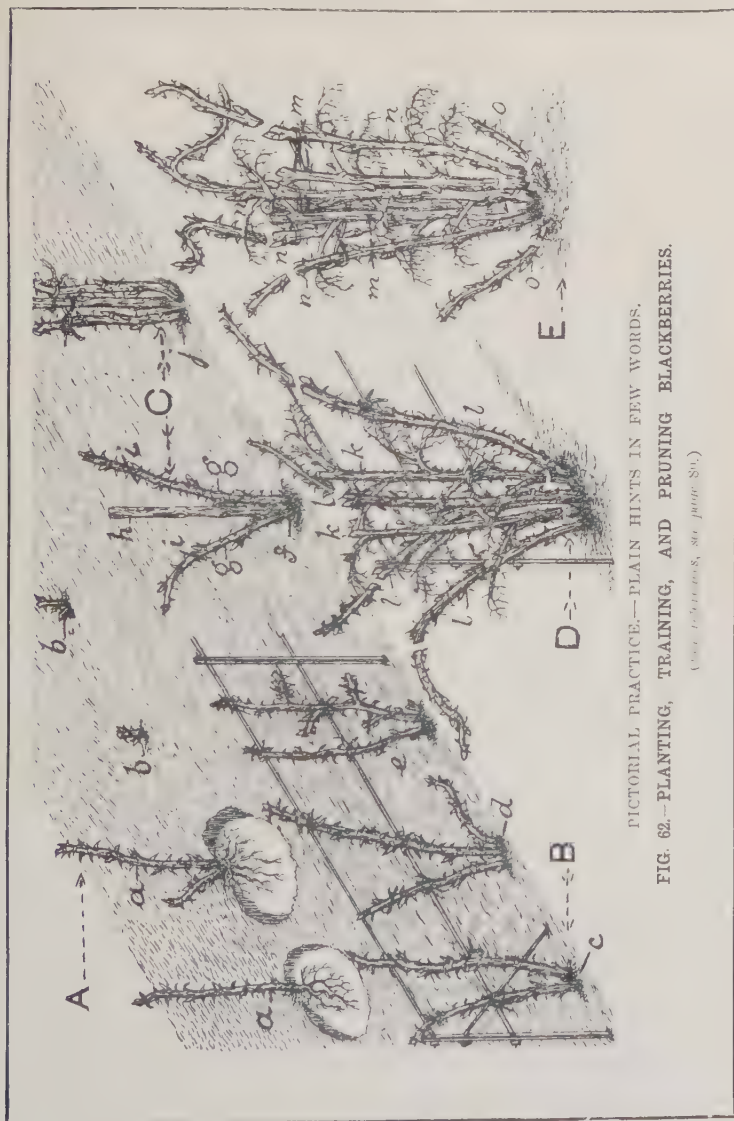
THE popularity of the fruit of the wild Blackberry is an earnest of the favour which the best cultivated varieties would enjoy if we were able to produce them with the ease and certainty of Raspberries and Currants. Unfortunately, this is not the case. For every instance of success we hear of half a dozen failures, and many people have abandoned Blackberry culture as a thing too full of disappointment for weak human flesh to tolerate.

Granting that the garden Blackberry is a somewhat capricious fruit, there is no evidence to prove that it is beyond the powers of the average fruit grower. I was not in evidence when the first Briton began to cultivate Raspberries, but I dare wager that he made a hash of it. He probably emerged extra early from his cave one fine morning, hitched up his skins, and, with a Prehistoric Patent Combination War Club and Spade, dug some suckers out of the woods. These he planted in his kitchen garden, and left unshortened. A little fruit was borne on the stronger canes, but afterwards the stools dwindled. Then the Briton whirled his patent combination implement in a rage, and went and killed the garden-loving savage who had told him that Raspberries were worth growing. If he had decapitated the Raspberries instead of his neighbour he would have done better. His descendants found that out in time, but there are still people about who do not know it, and they are only prevented from attacking wise advisers by a grandmotherly law.

Now, if we have not mastered all the points in Raspberry culture yet, it is not surprising that Blackberries are badly treated, for as a cultivated fruit the latter is in the babeling stage. Like our impatient ancestor, we want to plant canes and gather heavy crops of fruit before the plants have had a chance of establishing themselves. Having seen failure turned into success by change of culture, I refuse to believe that Blackberries are intractable; and so delicious, so piquant, so refreshing is the fruit, that I

Blackberry References (see page 81).

- A*, planting: *a*, one year old plants, indicating proper depth, with roots spread out evenly; *b*, the same plants cut down in early spring, leaving only two buds above the ground.
- B*, training to wire trellis, plants in rows 5 feet apart and 3 feet asunder in the row: *c*, plant with two canes as a result of cutting down to two buds in the previous resting season; *d*, plant that has formed two vigorous canes, and a weaker one from the base; *e*, plant that has formed one cane without laterals and one with—the side shoots have been pinched at about 9 inches from the main stem. The cross lines indicate the points of winter pruning.
- C*, training to a stake: *f*, plant in second winter after planting; *g*, canes allowed to grow loosely during the previous summer, and all suckers kept off; *h*, stake; *i*, points of shortening canes; *j*, a similar plant two years old, with canes shortened and secured to the stake with tinned string.
- D*, pruning Blackberry after bearing: *k*, old canes which have borne fruit during the last season cut out—they are shown detached at the base; *l*, successional canes for bearing fruit in the coming season, shortened, as shown where detached, and secured to the trellis.
- E*, pruning a Blackberry trained on a stake: *m*, old canes cut out, as shown detached near base; *n*, successional canes shortened to firm wood and secured to stake separately; *o*, weakly growths which have sprung from the rootstock shortened to one bud from the ground—these usually produce strong canes in the following summer, and are more desirable for reserving to bear fruit in succession the following season than are those which spring from the base of current bearing canes.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.
 FIG. 62.—PLANTING, TRAINING, AND PRUNING BLACKBERRIES.
 (See *notes*, see page 50.)

urge a trial with a few canes, confident that success will follow good culture.

It will be gathered from the foregoing that a most important point in securing success with Blackberries is to practise cutting back after planting. I am not prepared to say that success is impossible without it; but I do know that failure after failure has followed neglect of it, and that success has, after all, crowned the culture when, tardily and reluctantly, the disappointed grower has resorted to it. Blackberries may be planted either in autumn or spring, but whichever season be chosen the canes should be cut down to within 6 inches of the ground before growth starts.

Blackberries may be trained on a trellis or to stakes. The most business-like plan is to erect a wire trellis, but it is also the most expensive. If chosen, it should be 5 feet or more high. One or two of the dwarf growers would do with a lower trellis, but I think that anyone who makes up his mind to have a trellis would be wise to erect a fairly high one, so as to be able to accommodate any sort. In the absence of a wire trellis, a tall framework of stakes and rods would answer; and this could be made locally. With respect to the stake system, it answers very well, and is convenient. The stakes should be stout and tall, and should be creosoted at the base. Put them in before planting, so as to avoid injuring the roots.

There is no advantage in crowding Blackberries, and I suggest that if they be trained to a trellis they be planted 4 feet apart, and if to a stake 5 feet. The stations should be prepared well in advance of planting. Take off the top foot of soil, turn the subsoil over, and work a little wood ash or superphosphate into it. Return the top soil, and mix a little manure with it. In planting spread the roots well out, and scatter soil amongst them, pressing it gently to ensure firmness without injury to the fibres. Mulch with manure afterwards.

Blackberries ought not to bear the first year of planting, but the second. I may, however, say that I have known it necessary to cut them back a second time, and sacrifice two years. This was when they were planted in poor, dry soil, and a very dry season followed late spring planting. If they push many growths after the cutting back, thin out the weakest ones.

Now comes the question of pruning. Fortunately, it presents no particular difficulties. Practically speaking, the case is met by Raspberry treatment. After the fruit has been gathered, cut the canes that have borne it back half their length, and in autumn cut the portions left clean out close to the ground. This will give a chance to the young canes that sprang up from the ground in spring, and by autumn are several feet high. They will have room and exposure, so that they become well developed and matured. It is not advisable to cut these successional canes much, for if they were hard pruned a good deal of fruit would be lost. Really all that is necessary is to remove the upper few inches when soft and unripe, or when rambling untidily above and around the support. If there are side shoots they may be cut in.

There is rarely anything gained by having a large number of canes on each stool. Six are quite enough, as with Raspberries, and the grower need not grumble if he has less. If a large number push up, do not hesitate to cut some of them out, as a few selected canes, well developed and ripened, will bear prodigiously—in fact, more fruit will be got from four or five good ones than from a dozen bad ones.

The varieties are not numerous, so that there is little difficulty in



REFERENCES
 a, portion of branch;
 b, previous season's
 wood, on which the
 fruit, if any, is pro-
 duced on certain
 trees; c, current
 year's shoot;
 d, shoot
 called an *eye*, or
shoot, or *shoot*,
 in case of tree a
 fruiting and *eye*
 abundant; d, shoot
 with shoot, usually
 called a *shoot*,
shoot,
 b, upright growing
 branch as at foot of
 a functional tree,
 or a bush in fruit
 and, central to base
 and growth of a
 branch, shooting
 forward; c, fruiting
 shoot; d, side
 shoots; e, shoot
 stubbed shoot; f, so
 called spurs; g, let
 ends and stopped;
 h, lateral panicle to
 one leaf.
 (See also page 84.)

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.
 FIG. 63.—CHARACTERISTIC GROWTHS OF THE FIG TREE.

making a selection. The habit of the variety is noted in the following remarks on sorts :—

British, the wilding of British lanes, dwarf, bears splendidly under good cultivation.

Logan Berry, reputed to be a cross between a Raspberry and a Blackberry, dwarf to medium, a desirable fruit.

Parsley-leaved, tall or trailing, very free and good; should have plenty of room.

Wilson Junior, one of several American varieties which bear magnificent fruit, but are not quite suited by our climate, and are therefore unreliable.

Wineberry (Japanese) may be classed, for the sake of convenience, with the Blackberries; a strong grower, yielding fine, juicy fruit. It rambles so freely as to call for plenty of room.

The Raspberry-Strawberry.—There has been some talk about this fruit. It is *Rubus palmatus*, and is probably a species from Japan. It forms a low bush, and fruits pretty freely; but I should not advise my readers to trouble about it, as it has little flavour and is of no value for preserving.

Chapter XIII.—Figs.

THE Fig is hardly an everyday fruit. We do not see it in the majority of gardens; we see it only in the few. This is doubtless rather due to its want of perfect hardiness than to lack of appreciation. The man who samples a Grizzly Bourjassotte Fig just as it is gathered, luscious and mellow, from the tree, usually turns up his eyes in a sublime ecstasy, and wants more—a great deal more.

When there is accommodation for growing Figs under glass these delicacies are at command; moreover, it is quite easy to get two crops of them in a year. But if there is no glass, and outdoor culture or none at all presents itself as an alternative, it is necessary to choose a sheltered spot, and be satisfied with one crop. A healthy Fig is sometimes seen in the angle of a greenhouse wall, or some other warm and sheltered spot, even in the North of England; but the plant is not really hardy, and there is no certainty of keeping it through a hard winter unless it is protected. The best thing is to remove the growths from the wall early in winter, pack them together in a bundle, and fasten a mat round them.

When once it has made itself at home in a corner that it likes, a Fig tree needs very little attention. It will grow and fruit industriously. The knife will have to be called into requisition sometimes, but mainly to keep it from growing out of bounds. Nevertheless, it is just as well to know the fruiting habit of the plant, in case indoor culture has to be resorted to. Even in the case of outdoor trees there is a point which sometimes creates inquiry. This is with respect to the second crop of fruit, which is often seen on the trees in autumn. Most people watch the fruit through the winter with tender solicitude, in the full belief that it will swell and ripen in the spring. It is very rarely that it does so. It almost always falls off when the sap begins to flow freely.

In ordinary circumstances the Fig bears its fruit on the ripened wood of the previous year, the fruit that forms on the new wood falling off as stated.

REFERENCES.

A, characteristic branch: *a*, leader with fruit in various stages of development; *b*, side shoot that has not been stopped, with the fruits larger than a Hazel Nut removed, and those from the size of a Pea to that of a Hazel Nut retained for producing the first and only crop another season; *c*, side shoot that had all the incipient Figs larger than a Hazel Nut carefully rubbed off early in September, causing young fruit to form at joints; *d*, side shoot pinched at sixth good leaf, not counting basal ones, with young fruit ranging in size from that of a Pea to three parts full grown; *e*, side shoot stopped at sixth good leaf and large incipient figs removed by middle of September, with Fig fruits formed at joints; 1, Figs to be retained; 2, fruit to be rubbed off; 3, joints from which large fruit has been removed in September.

B, bearing shoot: *f*, large fruit (second crop) that seldom ripens in this country and to be removed, as it is usually damaged by autumn frosts, or falls in the spring or early summer; *g*, small fruit to be retained for the first and only crop (except in the case of very early varieties against south walls in the South of England and in unusually hot seasons).

C, bearing shoots after removing large incipient fruits: *h*, terminal wood bud; *i*, small fruit developing in following season into ripe Figs during August and September; *j*, joints from which large incipient fruits have been removed.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 64.—FRUITING WOOD OF FIG TREES.

When, however, the plants have glass protection this new-wood **fruit** matures. While, therefore, the young wood on outdoor trees may be thinned out when very thick, or the shoots disbudded, and the small, late-formed fruit on the shoots which are left picked off in autumn, the young wood on indoor trees may be retained as far as possible without overcrowding, and the fruit that shows allowed to remain. Some amount of finger and thumb work is necessary with pot trees, otherwise they would become rampant. The short, stubby side shoots may be left alone, but the extension shoots may be stopped at the sixth leaf if thickly placed. Laterals will probably push as a result, but except for those at the base of the leader they will not need stopping. The first stopping encourages the production of fruit.

A soil of sound loam, with an admixture of mortar rubbish, suits Figs. I deprecate the use of manure. The tree is gross enough in all conscience, and manure only makes it worse. Plenty of water must be given during the growing season, and the cultivator must be careful not to let his plants suffer from drought while the first crop is swelling in spring, or the fruit will fall. If red spider or scale should put in an appearance, use one of the remedies given on pages 78 and 79.

If an amateur wants one variety of Fig to grow in the garden he should choose Brown Turkey; if he wants two he should add White Marseilles. There are better flavoured varieties than Brown Turkey, such, for instance, as Grizzly Bourjassotte, White Ischia, and Negro Largo, but these should be reserved for indoors.



REFERENCES.

A, portion of firm, thoroughly ripened wood of the previous year's growth, called a cane, with well formed, firm and round, not flat and broad, buds, such as are found on gross and immature wood. The dotted lines show the cuts to be made for making various forms of eyes.

B, eye formed by a slanting cut above the bud and another transversely below it.

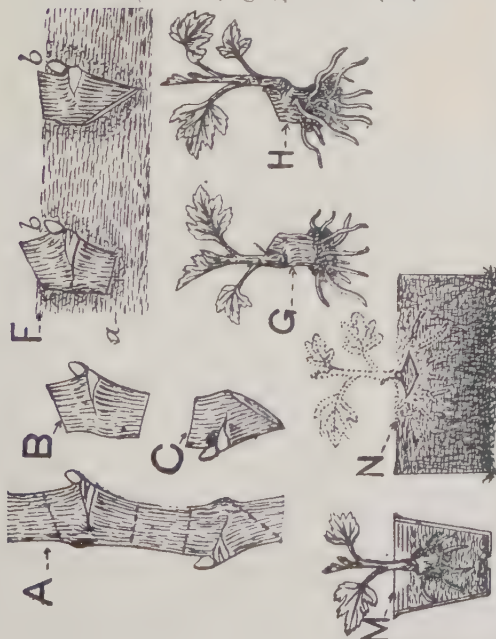
C, eye made by a cut above the bud and a slanting cut below from a point opposite the bud.

F, the eyes B and C properly inserted in Coconut fibre refuse, reduced to mould and mixed with a fourth of sand, in a propagating bed over bottom heat: a, bed; b, buds just level with the surface. Root formation from respective eyes: G from eye B, H from eye C. Callus and roots are shown in each case.

M, a cane from an eye, B, inserted in a pan or bed, and, after striking, pulled off.

N, eye and growth (in outline) inserted in a piece of reversed turf, 6 inches square and 8 inches thick, for securing a cane to plant out the same spring, the roots not being coiled as in a pot.

(See remarks on page 88.)



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 65.—RAISING VINES FROM EYES.

Chapter XIV.—Grapes.

OF all cultivated fruits the most interesting to professionals, the Grape is perhaps the most tantalising to amateurs. The latter see splendid clusters exhibited at the shows, and think with chastened sorrow of their meagre bunches at home. They read learned discussions in horticultural papers, and feel themselves outside the pale. I doubt if there is any real ground for all this, and even where very limited glass accommodation is possessed, some very tolerable Grapes may be grown, as it will be my business to prove.

From the time when, an eager youngster, I imbibed lessons in making and striking "eyes" from a marvellous old grower who could make Vines out of any odd chips, I have been accustomed to seeing Grape growing elevated into a mystery by that much criticised being, the local gardener. The great growers—the men who exhibit the splendid black or golden bunches which we see on show—very rarely make any secret or fuss about it. They just prune, thin, manure, syringe, and pocket the prize money, that is all. Those of us who have been behind the scenes at establishments where a good deal of exhibiting is done know that there is a little more than this in it; but the fact remains that the highly successful grower is generally more subdued than the "triton amongst the minnows" who overawes the local cottagers on meeting nights.

If nothing else had arisen to reduce Grape growing to its proper proportions, the wonderful developments in market culture would have done it. Those huge fields of glass where Grapes are grown by the acre have taken the conceit out of many a grower. It would be difficult for any horticulturist to survey the long vista of straight rods, huge leaves, and countless bunches without being impressed and silenced. No deep secrets here, no wagging of complacent heads, no loud boasting; just plain food, plain treatment, and cleanliness.

I propose to discuss a few of the difficulties which stand in the way of the would-be Grape grower, and see if they cannot be smoothed away. Touching on sources of failure may point the way to success.

Old Vines versus New.—The reader may be taking up Grape growing under one of three sets of conditions. He may be making a start with a new house or houses and new Vines; he may be commencing with old houses and new Vines; or he may be taking up the culture where houses and Vines already exist, and where he simply has to adapt himself to existing material. By turns we can give consideration to all of these circumstances, and thus provide information that will be applicable to every case. Perhaps that person is the most to be congratulated who is in the position of making an entirely fresh start. He will have more work but greater pleasure. It is frequently a thankless business to take over an old culture.

How Grape Vines are Propagated.—There are several ways of propagating Vines, but the commonest is to prepare and insert small portions of shoots, each with a bud, technically termed eyes. It is winter work, propagators considering that there is no better time than the period



FIG. 66.

A, cone nine months after the eye was inserted; a, point of cutting back in winter to get a strong fruiting cane; b, small side shoots.

just before the buds show signs of swelling, or at the very earliest stage of moving. The figures on page 87 show the way in which the shoots must be cut in order to make eyes. I was taught how to raise Vines by the hundred in a very small space by the following simple plan: Take a number of clean 6- or 8-inch pots, fill them one-third full of crocks, put on these some decayed turf pulled to pieces, fill up to the level of the rim with moist soil, make it concave, press it firm, scatter on some sand, and insert the eyes 1 inch apart all over the surface, surrounding them with sand, and leaving the bud level with the top of the soil, not buried. Plunge in a tan bed or propagating box, in order to secure a bottom heat of 70° to 80° . Under this treatment the eyes quickly start growth, form roots freely, and force the bud into a shoot.

Management of Young Vines.—When the stage indicated is reached we have an eye no longer, but a young plant, which can be induced to develop into a planting cane without a great deal of difficulty. The first thing is to give it more room, and by the time it has made a pair of leaves it must be potted singly. Crock some 4-inch pots, fill them to within $\frac{3}{4}$ inch of the rim with a mixture of loam 3 parts, leaf mould 1 part, and sand 1 part, and give a watering. Water the soil in the large pot, and after it has drained lay the pot on its side and remove the plants one at a time. Place each in the centre of a 4-inch pot, and make the soil around it firm. The plants should have a genial growing temperature of 60° to 65° by night, rising naturally 10° or 20° by day, especially with sun heat. If well watered when the soil approaches dryness, they will soon fill their pots with roots, and when these show at the drainage hole the plants should be transferred to 6-inch pots, preserving the ball of roots and soil intact, and pressing the fresh compost firmly round the old. This treatment will ensure vigorous young canes, which will be many feet long within the year.

Is Home Raising Advisable?—It is worth while to pause for a moment and consider this question. It is very doubtful whether it is worth while for an amateur to attempt to raise his own Vines. In my opinion he is wise if he saves himself the time and trouble and goes to a nurseryman. Trade growers have both the convenience and the practical experience required; amateurs usually lack both. Most market growers raise their own, as do many professional gardeners. In any case the inclusion of remarks on propagating is justifiable on the score of completeness. I want to show Grape growing from the eye stage to the finished bunch.

Vines for Planting.—Things have changed very much in Grape growing since, just about the time when our Jingoos were singing "The Russians shall not have Constantino-o-pull," I began to learn lessons in Vine making. We used to consider two years a fair time to

allow for making a first-rate planting Vine; nowadays, if one may believe all one hears, some feverishly up-to-date growers have taken several hundred-weights of fruit off their Vines before they reach that age. Our old-style canes may have been rather slow, but beyond all question they were sure. They were cut down to a good bud near the surface of the soil in November of the same year that they were struck, and they then pushed a strong, thick cane, firm, well ripened, and studded with bold buds. This was the planting-out cane, and a grand specimen it was.

Making Vine Borders.—The future treatment of the Vines comes after planting, so that if we take things in their proper order we must leave them for a few minutes and consider the border. Vines may be planted

under one of three conditions: (1) In an inside border; (2) in an inside border with access to an outside border; (3) in an outside border. The advantages and disadvantages may be summed up as follow:—

A properly made inside border puts the roots under the grower's control, and is so far good; but in a very small house may not afford sufficient room.

An outside border is usually watered by the elements, thus saving labour; but sometimes there is too much, and at other times too little, moisture. Again, the

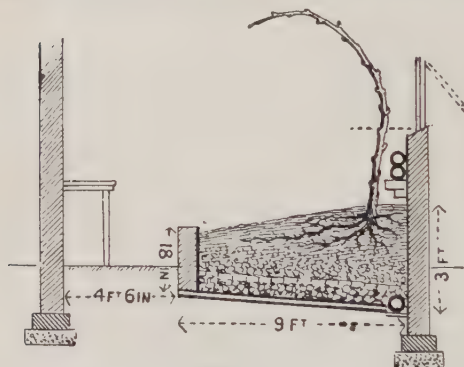


FIG. 67.

An inside Vine border, 9 feet wide, showing drain, rubble, and Vine planted (see page 92). The dotted horizontal line shows where the cane is to be shortened.

roots may ramble into a bad medium, in which case shanking may ensue.

The inside-cum-outside border is an excellent compromise when the house is small; but the lower part of the front wall must be built in arches, to allow the roots to get outside when they have increased so much that the interior no longer provides them with an adequate supply of food.

In making an outside border there should be a slope from the house to the path, where a row of drain pipes should be laid, dropping slightly from right to left or left to right, so that surplus water may be carried off. Good vegetable soil will grow Grapes very well, and frequently there is no necessity to remove the natural soil; but where the soil is very poor it may be well to remove it to a depth of 2 feet, lay in some turves grass side downwards, and, in filling in, incorporate with the soil a dressing of thoroughly decayed manure or a mixture of road scrapings, burnt garden refuse, and $\frac{1}{2}$ -inch bones. Make the soil firm.

In making an inside border it will be advisable to be a little more thorough. Remove the soil to a depth of at least 2 feet, cut the base of the trench into a slope from the middle of the house to the front wall, and either ram it very hard or lay down a coating of concrete, the latter for choice. Then spread on a 6-inch thickness of brickbats or other hard rubble,

laying this also over the drain pipes, which should run along under the front wall. This done, put in a double thickness of turves, grass side downwards, and fill up with the best soil at command, preferably chopped turves, with a tenth part each of broken bones and mortar rubbish. A depth of not less than 2 feet and not more than 3 feet is desirable. Let me strongly deprecate a very rich compost. It is not very long ago that I had to totally undo, on behalf of a friend, the work of a "first-rate practical man" (this was the hero's own description of himself). His border was nearly half leaf mould and rich, decayed manure, and was naturally loose. The roots went clean through it, and the Vines languished; but when the stuff was wheeled out, taken to its proper place (the potting shed), and a stack of turves built in its place, the Vine roots had to fight their way through the firm, fertile mass, fibres multiplied, and the Vines went ahead. So did the "first-rate practical man"—to another place, in disgust.

Shortening Vines After Planting.—The task of forming a good fruiting Vine has not ended with the planting; in fact, to those who buy their plants it is only commencing.

To begin with, it is true wisdom to shorten the cane hard, or, what is equivalent, to rub off the buds first and shorten afterwards. Let me make sure that writer and reader follow each other in this matter, for it is very important. A Vine must not be left its full length after planting, or it will break strongly at the top, remain poorly developed at the bottom, and never make a good fruiter. It must be shortened, and it is easy to decide how much. If the Vine is planted in an outside border, remove a brick or two from the wall, pass

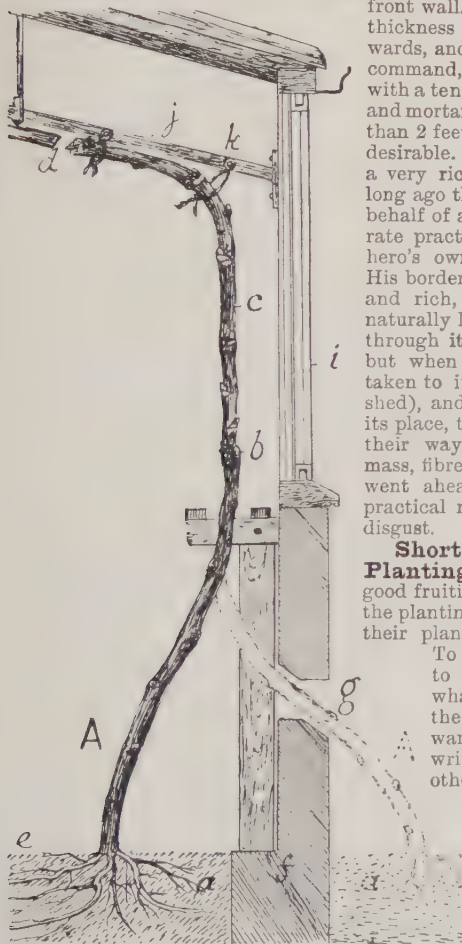


FIG. 68.—SHOWING HOW A VINE MAY BE PLANTED EITHER INSIDE OR OUTSIDE.

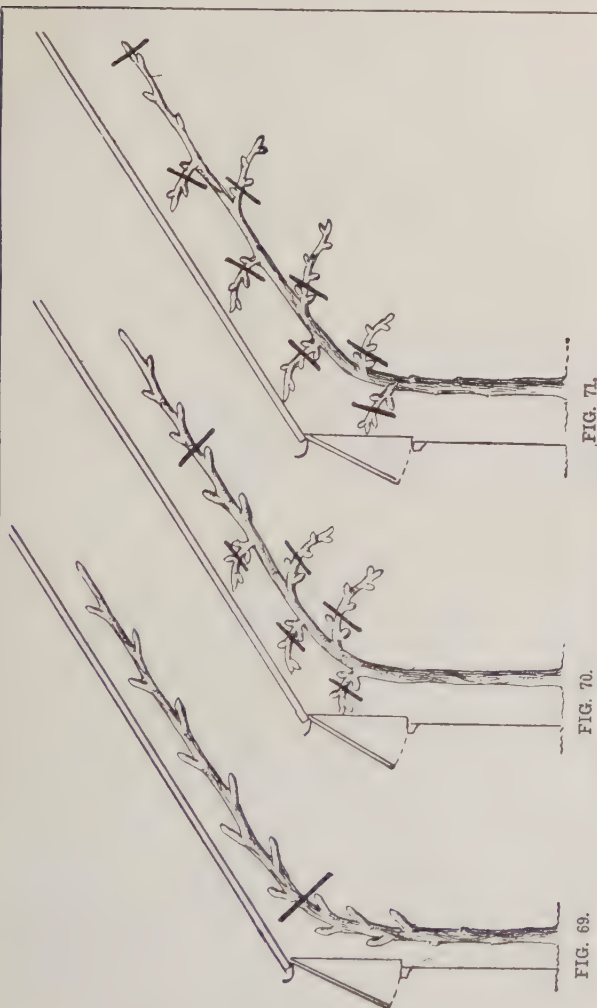
A, Vine: *a*, border; *b*, point of first pruning; *c*, growth subsequently made; *d*, point of second pruning. Section of house: *f*, front wall; *g*, hole made in front wall to admit cane; *i*, front glass; *j*, trellis; *k*, lowest wire of trellis.

the cane through, and train it under the roof. If planted inside the house, train it against the front wall and under the roof. At the point where a part of it bearing a good bud comes under full exposure to light through reaching the glass (the latter being either a portion of the front wall or the roof itself) pass a knife through the cane, and a new growth—the future bearing rod—will start from the bud. The slight modification previously hinted at is advisable if planting is done in spring instead of winter; in this case rub off all the buds below the one exposed to the light, and do not cut off the upper part until the shoot which broke from the bud is in free growth, and is therefore a good channel for the sap. The reason of this is that if a late planted Vine is cut back to a bud that is practically dormant “bleeding,” or loss of sap, is liable to take place to such an extent as to weaken the Vine.

There is no benefit in planting Vines deeply. The upper layer of soil may be finer than the lower, and if there is 8 or 9 inches in depth of it there will be sufficient to work amongst and cover the roots. Press it firmly. To be strictly correct, the border should be made six or eight weeks before planting, in order to allow it time to settle: this will save a great deal of ramming. Plant not less than 3 feet apart, 4 feet is better.

The Development of a Young Vine.—There is nothing more interesting in the whole range of gardening operations, bristling though it is with fascinating features, than the development of a young Vine. Like the “Popular Educator” juvenile whom we see on the posters, it may develop into vigorous youth, robust manhood, and honoured age; or reach maturity and decrepitude by various stages of vice and idleness. If the general culture be right, of which more anon, the shoot from the bud previously referred to will grow rapidly, and by the end of the season, perhaps before, it will have reached the top of the house. It will not, however, be either a thick shoot or a ripe one—it is impossible that it should be; but we want it to be both, and to secure this end we shorten it to about one-third the length of the rafters. This shortening is usually done in autumn or winter, but some growers pinch out the tip while it is growing. Any side shoots which push are shortened to one or two buds. The next year the rod will thicken considerably. The leading shoot will reach the top of the house, and may again be shortened, this time to two-thirds the length of the rafters. The second shortening is sometimes omitted, and nothing very terrible happens; but it helps the rod to thicken, and I consider it to be advisable. (See Figs. 69, 70, and 71, page 93.)

The Beginnings of Pruning.—When the grower has made sure of his rod, he may concentrate his attention on the side shoots, commonly spoken of as laterals, for these bear the fruit. It is not wise to encourage strong lateral growth and permit free fruiting until the rod is made. It is better to prune in the laterals when shortening the rod, as already described. But a couple of bunches on the lower laterals the second year will do no harm, and from four to six may be allowed the following season. Now as to the management of the laterals. In the first place, how many should there be on a rod? A safe rule is to select a number of good buds 18 inches apart on one side of the rod, and remove the others. Do the same on the other side, taking care that the buds chosen are about halfway between their opposites. In other words, do not have the laterals on opposite sides of the Vine springing from points close together, but let them come between each other, which will bring them alternately left and right of the rod, about 9 inches apart. These laterals will, of course, develop



PRUNING YOUNG VINES AFTER PLANTING.

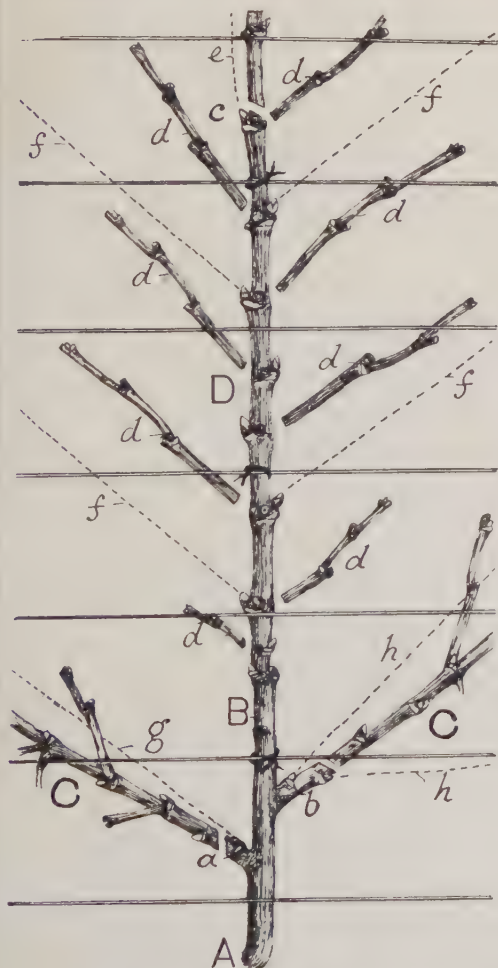
The bars show, *Fig. 69*, where to prune the first season; *Fig. 70*, where to prune the second season; *Fig. 71*, where to prune the third season.

with the leader, and as it thickens so will they become stronger. They must be pruned each autumn. As a rule they are cut to one eye—that is, only one bud is left on the stump, and it is close to the rod. Sometimes two buds are left, in order to give a choice between two shoots when the following growing season comes. If this is done the best should be allowed to grow, and the others rubbed out while still quite small, as there is no particular gain in having two laterals on young Vines, although after the pruning there are two buds to choose from instead of one.

General Pruning.—We have now got our Vines established and in proper bearing order, and as we have gone halfway on the road to pruning we may as well deal with pruning as a whole—I mean on established Vines. Here, of course, we join company with the grower who is not in the position of starting with Vines, but of taking up the management of rods already established. The spur system is the one usually practised; and, although certain modifications are called for under particular circumstances or with special varieties, it may be described as the best in the main. Spur pruning may be learned theoretically in two minutes if a little study is given to Fig. 73, page 97. The letters *a a* show the rod, *b* the spur, *c c c* the lateral, *d d* sublaterals, one pinched at the first leaf, and *e* a sub-sublateral (if I may be pardoned an awkward phrase), also stopped at the first leaf.

Now for details and comments. In the first place, it will be noticed that there is a considerable space between the rod and the first leaf; in other words, there is a long spur. Long spurs are objectionable, and by close pruning when the Vines are young they may be obviated. Next we come to the first leaf. This should be close to the rod, and have a good bud at its base, to which the lateral may be pruned in the autumn. The leaf is often small or insect-ridden, and the bud is consequently weak. In this case a better bud farther from the rod has to be chosen for pruning to, but this means a long spur. The leaf near the rod should be kept clean and healthy, so that it may thoroughly nourish a fat, plump bud; then we get a short spur and a fine lateral the following year.

Proceeding with our inspection of the lateral, we come to a second leaf and a bunch of fruit. Now, although a bunch often shows at this point it need not necessarily be chosen. It may be of bad shape (see remarks on choosing bunches to come), in which case it should be removed, and another one which will show farther along be chosen. It will be observed that near this point, but on the other side of the lateral, is a side shoot, or sublateral. It would be a mistake to let this grow, for it would rob the bunch. It should be stopped, as shown. Another growth may, and probably will, start from it, as shown above the second *d*; this should also be stopped at the first leaf. A twirled growth called a tendril is seen below; this is valueless. Near the end of the lateral we see that it is severed. The exact point at which this stopping takes place depends on circumstances. It is a safe rule to stop at the second leaf beyond the bunch; but some growers like to stop at the first, some at the third, and some at the fourth. There is room for a great deal of difference of opinion—and some amount of tomfoolery—in Vine culture. If leaves were divided into sixteenths, there would be found people ready to argue by the hour whether the laterals should be stopped at two leaves and fourteen-sixteenths, or two leaves and fifteen-sixteenths; and they would expect the universe to listen admiringly all the while! Three or four leaves may be left, if there is no danger of the laterals running into those on neighbouring rods. Two axioms ought always to be staring the pruner in the face: (1) never stop (remember I speak broadly, there are



REFERENCES.

A, bend in the Vine stem at the angle of front or side and roof lights—portion below to ground called stem.

B, rod—all parts of Vine on trellis over one year old and with bearing side branches are called the rod.

C, bearing shoots, termed laterals, showing a, pruning to one bud, thus forming a spur, hence such is called spur pruning; b, bearing shoot pruned to two buds.

D, portion of last season's cane or leader, showing c, point of shortening; d, laterals cut off close to the cane.

Object of pruning: Leader cane—e, strong leader growth in following season; f, four vigorous bearing shoots. Last year's bearing shoots—g, one bearing shoot from as near the base of the rod as possible; h, two bearing shoots in cases of doubtful fruit production when pruned to one bud.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 72.—PRUNING GRAPE VINES.

technical exceptions) so severely that there are gaps between the leaves; (2) never allow leaves to remain which have not room to spread fully. Big, leathery leaves, nicely covering the glass, but not overlapping each other, represent the condition at which to aim.

With respect to pruning after the fruit is gathered, it is well to do it in two stages. The first, which may come into operation when the leaves begin to change colour, may be at a point near the tendril; the second, which should be performed as soon as the leaves have fallen, should be to the bud at the spur.

Grapes in Greenhouses.—It is an attractive topic, this of growing Grapes in greenhouses. Of course, the large grower, with his range of vineries, can afford to ignore it; but it is of real, practical interest to a very large class of people. The matter presents itself under two aspects: (1) the association of Grapes and permanent indoor plants; (2) combining Grape culture with plants which may be grown out of doors in summer, or in frames. Although I am familiar with instances which prove that plants may be grown permanently with Vines, I consider the other system far preferable. By limiting himself to a few popular classes of flowering plants, and procuring a select number of varieties of them, the amateur can give himself just as much pleasure as if he grew a hundred kinds—probably, indeed, far more. Here is a list of plants that may be associated with Vines:—

| | | |
|--------------------------------|-----------------|---------------|
| Arum Lilies (Richard- ias). | Calceolarias. | Pelargoniums. |
| Begonias (tuberous). | Chrysanthemums. | Primulas. |
| Bouvardias. | Cinerarias. | Roses. |
| | Cyclamens. | Solanums. |
| | Fuchsias. | |

If an amateur got a select list of varieties of these, and grew them well, he would have quite enough to occupy his time, and he would have sufficient material to secure a long display of beauty. The Arum Lilies, Chrysanthemums, Pelargoniums, Roses, and Solanums would all do out of doors in summer. The Bouvardias, Calceolarias, Cinerarias, Cyclamens, and Primulas would be quite at home in a frame. As to the Begonias and Fuchsias, they do not object to a certain amount of shade, and would probably do very well under the Vines, but they could also be grown outside in summer. The great advantage of this plan is that it permits the amateur to give a single eye to the welfare of the Vines during their growing season, which is much more likely to conduce to his peace of mind, and to ensure successful results, than attempting to reconcile the conflicting interests of plants and Grapes. The winter- and spring-flowering plants which I have named would enliven the house when the Vines were at rest, and in the early stages of their growth, and they could be supplemented by Dutch bulbs. Moreover, "Geraniums," Lobelias, Dahlias, Cannas, and other bedders could be wintered in the house. If the plants named are not enough to exhaust the energies of the grower, he may bring in Acacias, Camellias, Daphnes, and Epacris to fill up his time with. All could be made to thrive. It is not well to have many varieties of Grapes in a small house; indeed, it would be wise to confine attention to two—namely, Black Hamburgh and Foster's Seedling, or Buckland Sweetwater instead of the latter, if preferred.

Times of Starting Vines.—It will be apparent that the time of starting Vines must depend upon the time that ripe fruit is wanted. Those



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 73.—VINE LATERALS WHEN IN GROWTH.

a, a, rod.

b, spur.

c, c, lateral.

d, d, sublaterals stopped.

e, e, secondary sub-lateral stopped.

who are growing their Grapes in a greenhouse will find it best to let them start naturally in April. If the Vines do not show signs of breaking then, gentle heat may be applied if it is at command. In vineries with a proper heating system it is possible to have Grapes ripe in March, but it would be necessary to start early in the previous November in order to ensure this. Vines thus forced early are soon worn out. The market men generally content themselves with fruiting them once, throwing them away afterwards, and filling their place with young canes, of which care is taken to provide a constant supply. Approximately, it is safe to allow Black Hamburg five months from start to finish, and Muscat of Alexandria six. With the desire of putting information as respects temperature before my readers in the most compact form, I have prepared what I believe to be an original table, showing the proper temperatures at various stages of growth.

| Stage of Growth. | Day Temperature. | Night Temperature. |
|-----------------------------|--------------------------------|--------------------|
| Starting | 55° to 65° | 50° |
| • Buds swelling | 60° to 70° | 55° |
| In leaf | 65° to 70° | 60° |
| In flower | 70° to 75° (with sun 10° more) | 65° to 70° |
| After flowering and setting | 70° to 75° (with sun 10° more) | 60° to 65° |
| Berries swelling | 80° to 90° | 65° to 70° |
| Stoning | 70° to 80° (with sun 10° more) | 60° to 65° |
| Re-swelling | 80° to 90° | 65° to 70° |
| Colouring | 80° to 90° | 65° to 70° |

These temperatures are suitable for Black Hamburg, Foster's Seedling, Buckland Sweetwater, Alicante, Madresfield Court, and Gros Maroc. Muscat of Alexandria should have 5° more at each stage.

Syringing.—There has been much discussion on the question of syringing Vines at starting time. The fact that many highly successful growers practise it is sufficient proof that there is nothing very bad about it; on the other hand, it is certainly not indispensable. Most growers will follow the course which they have found to answer, in spite of arguments. Whether or not syringing be practised when the Vines are breaking, it may be pursued afterwards at the various stages of growth, although most cultivators lay the syringe aside while the plants are in flower. A free use of the syringe ensures a moist, agreeable atmosphere, thus keeping red spider in check, and incidentally putting a curb on mealy bug. In all cases it is best to use clean rain water for syringing, as there is less risk of spotting.

Tying the Shoots.—I must not forget to say a word on this subject. It is often a difficult one, because of early mistakes. For instance, there are cases in which two or more shoots spring nearly simultaneously from the spur. Now, we have seen that although a system of culture is sometimes practised which allows two shoots to develop from each spur, the general practice is to permit only one. Assuming that we are going to have one only, it would be a mistake to allow two or more to develop. As a matter of fact, it is best to remove the superfluous ones when they are $\frac{1}{2}$ inch long or thereabouts. This is termed disbudding. When the chosen one has reached the glass it will have to be tied down into position on the

wires, which, by the way, should be 18 inches from the glass. This tying down is very delicate work, as the shoots are liable to break off, and thus make an ugly gap. It is best done by degrees, depressing the shoot a little one day, tying it, and leaving it: then depressing it a little more. If the



FIG. 74. — GRAPE ALICANTE. (See page 102.)

Vines threaten, as they usually do, to break more strongly from the upper than the lower part of the rods, they should be removed from the wires and the tops coiled, so as to check the flow of sap.

Fertilisation, or Setting.—I have mentioned that it is usual to put the syringe aside when the Vines are in flower—a period when the house, with its pleasant, blossomy odour and cool atmosphere, is most agreeable

Some growers do not hesitate to use the syringe for dispersing the pollen; but amateurs might easily overdo this, and will perhaps be wise to rely on shaking the rods, or circling the bunch with the fingers and drawing the hand gently down. Even this is not really necessary if the weather be bright and the atmosphere not saturated with moisture, as the warm, dry breezes flowing through the ventilators will scatter the pollen and ensure setting.

Selecting and Thinning the Bunches.—There are few Grape growers, probably, who do not look forward to that halcyon time when some inventive genius shall have introduced a device for thinning Grapes by machinery. The task is tedious, slow, and, to active people, irritating. Moreover, unless done in the early morning it is so trying that if we gave our convicts a course of it the humanitarians would be in full cry. As it is only honest people who undergo the ordeal, of course it does not matter. The bunches must be thinned if they are to be any good, and in the absence of the patent we must get up in the small hours and wrestle it out. To begin with, I should like to say that many people give themselves a great deal of unnecessary trouble in the task of forming a shapely bunch through making a bad choice to begin with. If the bunch is naturally ill shaped considerable difficulty will be experienced in making a good one of it; in fact, the task may prove to be impossible. On the other hand, if the bunch is naturally well formed the task is comparatively easy. It is not too much to say that the future bunch may be seen in the tiny one which first forms. Study the shape of this for a few moments. Perhaps the first one seen is a lop-sided customer, or squat and ungainly, or dumpy at the base. If so, remove it. On the other hand, it may taper to a point, and the upper part be graced by a pair of well-balanced "shoulder" shoots. If so, keep it; it is the sort of bunch to do you credit. Theoretically, a model bunch should come to a point at the base, which should consist of one good berry. Preserve this, and with a pair of pointed Grape scissors in the right hand to clip out the berries, and a small forked twig in the left to hold the bunch steady, work upwards towards the shoulders, preserving the balance and symmetry as much as possible. Thinning must not be deferred after the berries are $\frac{1}{8}$ inch in diameter. At that stage, or just before, it is easy to calculate the amount of space to leave. Remember that enough should be provided for the berries to "pack" a little, and thereby ensure a firm bunch. Bunches with tightly squeezed berries and bunches with loose berries are equally bad. More space must be left for large berried sorts like Gros Colman and Gros Maroc than for Black Hamburgs, Alicantes, Muscats, and Lady Downe's.

Ventilation and Scalding.—There is a great deal in ventilation. Three-fourths of the trouble which we now have from scalding would be obviated if air-giving were properly understood. The first principle to be learned is this: Ventilate to keep down the temperature, not to bring it down after it has once been allowed to get very high. Ventilation should be practised very early in the morning. If the house is not looked at till 8 o'clock, it may happen that the temperature has risen so high that it is impossible to get it down. Rather than this should happen, leave a little air on all night. Late ventilation shows its evils the most strongly when a spell of dull weather is followed by a sudden outburst of sunshine. Owing to the surface of the berries being cold, moisture condenses on them, and when the sun bursts out this is licked up so rapidly that the skin suffers—

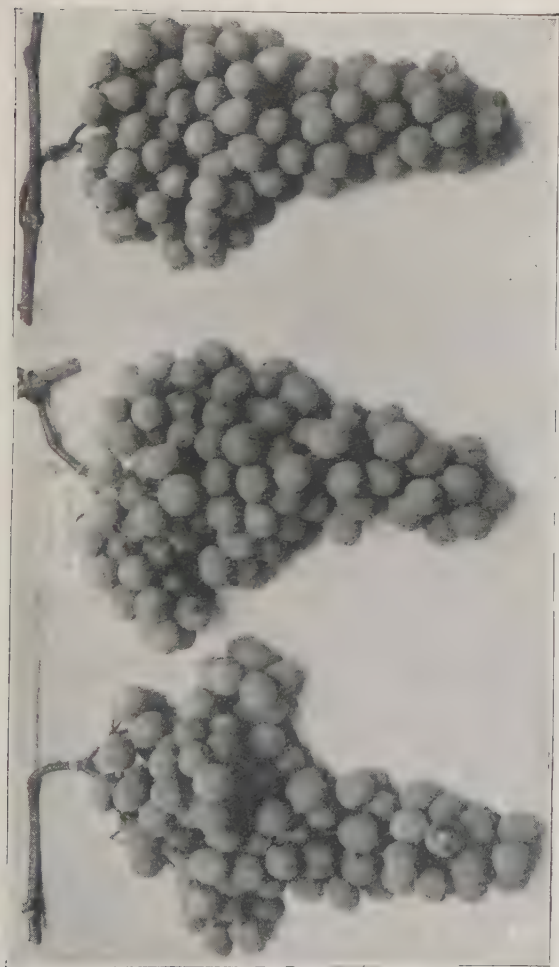


FIG. 75.—GRAPE MUSCAT OF ALEXANDRIA.
(See page 102.)

hence "scalding." Scorching of the leaves may arise from the same cause. Look at it which way you will, the Grape grower should be an early riser. If there are ventilators on both sides of the house, do not open those on the windward side in cold weather. The syringe should be used freely about 3 p.m. and an hour afterwards the house should be shut up, in order to bottle up as much heat as possible.

Notes on Varieties.—A few remarks about the leading varieties of Grapes may assist anyone who is anxious to make a selection. I take them alphabetically: *Alicante*, a very useful late black Grape, easy to grow and colouring well. *Alnwick Seedling*, a handsome black Grape, but a bad setter; leave it alone. *Black Hamburgh*, the most useful variety grown. It will do well in a cool house, crops and colours well, and has a brisk flavour. Choose it unhesitatingly if only one sort is wanted. *Black Muscat* or *Muscat Hamburgh*, a most delicious Grape, but a bad setter. It is one of the varieties which should be left to experienced cultivators. *Buckland Sweetwater*, a useful white Grape, very frequently selected for a cool house. I consider Foster's Seedling rather better. *Canon Hall Muscat*, a white Grape with immense berries, but a bad setter. *Duke of Buccleuch*, a large berried white Grape, of very fine appearance when well done. It succeeds better when young rods are trained in for fruiting than when spur pruned. *Foster's Seedling*, the best all-round white Grape, although not the richest in flavour. It grows, bears, and sets well, and will do in a cool house. *Gros Colman*, perhaps the largest-berried Grape grown, and a good bearer, but difficult to colour unless plenty of heat can be provided at the finishing stage. *Gros Guillaume*, a variety which produces very large bunches. It is a black Grape, and colours well, but the flavour is commonplace. *Gros Maroc*, a useful black Grape, cropping well and giving very large berries. I prefer its flavour to that of Gros Colman, but that is not saying very much. *Lady Donne's*, a very valuable black sort for late keeping, but liable to scald. See remarks on ventilation. *Madresfield Court*, a delicious black variety, which will do well under cool conditions, but is addicted to cracking. Extensive removals of foliage at one time must be avoided. *Mrs. Pince*, a black of good flavour, but bad to colour and set. *Muscat of Alexandria*, a delicious white Grape, which ought to be grown by everybody who can provide a warm house. *White Frontignan*, a capital cool house Grape. The berries are small, but the flavour is excellent. The following selections of Grapes may be found useful—*Varieties for outdoor walls*: Miller's Burgundy and Royal Muscadine. *Varieties for cool vineries*: Black Hamburgh, Foster's Seedling, Madresfield Court, and White Frontignan. Choose the first pair if only two are wanted. *Varieties for early forcing*: Black Hamburgh, Foster's Seedling, and White Frontignan. *Varieties for late use*: Alicante and Lady Downe's.

Renovating Old Vines.—This matter has been touched upon in connection with shanking. Vines which have been systematically over-cropped fall into ill-health sooner or later. It frequently happens that Vines are seen in small conservatories or greenhouses wherein a whole medley of plants is grown. The Vine rods are close together, the laterals crowded and weak, the bunches numerous but miserably small, and the colour of the Grapes is bad. Shanking, or shrivelling up of the stems of the berries, usually supervenes, and the mischief is complete. Such cases are difficult to cure, but improvement can often be effected when the case seems hopeless, providing the cultivator is prepared to content himself with fewer

bunches in the future. Nothing is any use if overcropping is persistently practised. The first thing should be to get at the roots, if possible; and if they are in bad soil raise them and give them better. Then the rods should be thinned when the Vines are at rest. If they are from $1\frac{1}{2}$ to 2 feet apart, cut out every other one at the base. This will give a chance to the laterals

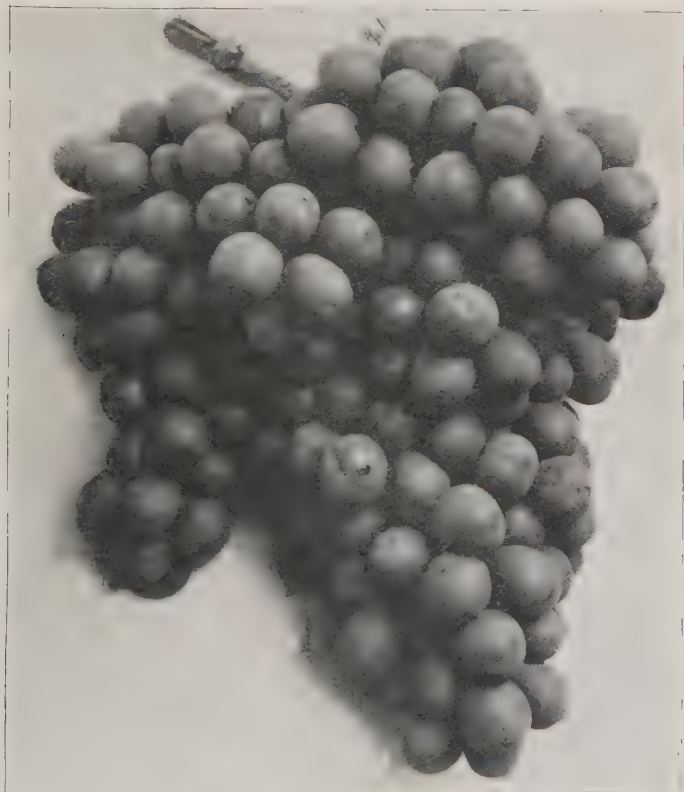


FIG. 76.—GRAPE ALNWICK SEEDLING.

(See page 102.)

which spring from those left. Not more than ten bunches should be left on the following season, and six would be better. Before the Vines start spread on the following dressing:—

| | |
|---|--|
| Steamed bone flour, 4 parts. | } Mix and apply at the rate of 4 oz. per square yard. |
| Nitrate of potash (saltpetre), 3 parts. | |

Give plenty of water and a weekly soaking of liquid manure during the growing season, and the Vines will improve.

Keeping Grapes.—Grapes may be kept for many weeks, and even months, if the bunches are cut with a piece of lateral, and this is inserted in a wide-necked bottle full of water. The bottles should be fixed in a sloping position, so that the Grapes hang clear. They must be placed in a cool place where the air is pure and sweet.

Shanking.—There are plenty of Grape growers who are devoutly thankful that their experience of shanking is limited to seeing it in the vineries of their acquaintances. They can tolerate it there with some amount of complacency as a rule. Now shanking is essentially a preventible complaint, but this information only conveys cold comfort to those who have inherited a legacy of it from some other grower, who might have brought preventive measures into play but did not do so. Those people, now on the eve of commencing Grape culture, who follow out to the letter the instructions which have been given in other pages, will certainly not have shanked Grapes, but I cannot ensure the same immunity for those luckless beings who take premises on which the Vines are of hoary antiquity, have been atrociously overcropped, and have sent roots far away into some bad soil. Shanking, or shrivelling of the footstalk of the berries, may arise from many causes. Even young and healthy Vines will sometimes show it. I have seen a bad attack of it in the vineries of a grower who boasted his scores of prizes for Grapes, and yet was so overcome by instincts of greed as to mercilessly overload his Vines. I have seen it in an amateur's conservatory, where the roots of the Vines were confined in a small border that had been allowed to get dust dry. And, needless to say, I have seen an unlimited amount of it in old houses where the roots have got beyond the grower's control. It will be seen from the foregoing that to put an abstract query about the cause of, and remedy for, shanking is not enough to draw a wary expert. He wants to know, you know. He is circumlocutory from sheer force of circumstances. He responds with a series of carefully worded inquiries before committing himself. The remedies for overcropping and drought are obvious to the meanest intelligence. The runaway roots cause is a tougher one to deal with. There is nothing for it but to investigate. Remove the soil from the border so as to bare the largest roots, and then endeavour to trace them. If they cannot be run down, and there is real room to suspect that they have got into bad company, sever them and lift the loose ends nearer to the surface, where there is fresh, sweet soil. This may be done when the leaves change colour in the autumn. There is no need to wait until they are all down. By remaking the border and working up new rods, old, shanky Vines may often be led into ways of righteousness.

Mealy Bug, Red Spider, Scale, and Thrips. See pages 78 and 79.

Grapes in Frames or Ground Vineries.—I have seen some very successful, and some very disastrous, attempts to grow good crops of Grapes in what are termed ground vineries. In the one case healthy growth and excellent bunches rewarded the efforts of the grower; in the other puny shoots, rusty with the work of red spider, and spindly bunches without size, colour, or flavour, were in evidence. It is plain as daylight that something besides the inherent capacity of the Vine to accommodate itself to a lowly home must account for this contradiction, and the causes of failure were not, as a rule, very far to seek. They might be enumerated as follow: (1) unsuitable varieties, (2) bad planting,



FIG. 77.—A SHANKED BUNCH OF GRAPES.

A, stem of branch sound; *a*, berries shanked; *b*, shoulder affected; *c*, berries shanked; *e*, berries shanked; *f*, footstalks, berries fallen.

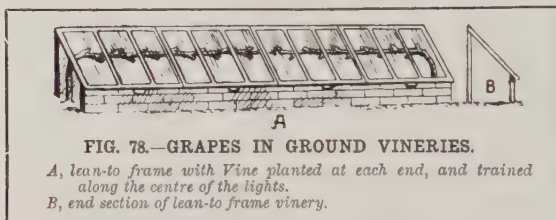
B, main stem shanked (*d*).

C, first appearance of shanking; *g*, dark speck.

D, shanking developed; *h*, wire-like shrivelled footstalk.

(3) want of ventilation, (4) neglect of pruning. Perhaps if we take these points one at a time we shall be able to do some little good.

(1) *Varieties*.—We have already seen that the varieties of Grapes differ. They have individual peculiarities, which must be taken into serious consideration when such a system of culture as that now under consideration is being practised. I do not say that it is impossible to grow such varieties as Madresfield Court, Muscat of Alexandria, Gros Colman, and Alnwick Seedling successfully in ground vineries, but I have never seen them thriving, and I am quite sure that there are plenty of varieties which would give the average grower a much better chance. Some people affect to despise such Grapes as White Frontignan and Chasselas Vibert, yet what grave defect can be urged against them beyond smallness of berry? I agree that these sorts would look insignificant if placed alongside Gros Colman and Gros Maroc, but I deny that there is any good reason why they should be so compared; and in any case I affirm that the balance would be more than redressed if flavour were taken into consideration also. I hope that it is



not a very far-fetched assumption that flavour *is* worth considering, in the case of something that we are not going to stand looking at for ever, but are sooner or later going to eat. Now, White Frontignan and Chasselas Vibert are Grapes of delicious flavour; moreover, they are accommodating in their nature, and will thrive under cool conditions. They are small in berry, to be sure, but if the grower must have something bigger, let him not be deluded by the temptations of Canon Hall and Gros Colman, but content himself with Black Hamburgh and Foster's Seedling.

(2) *Planting*.—There are various ways in which planting can be badly done. The soil may be made too "fat" with manure, and the Vines put in loosely. Further, they may be planted late and pruned back, so that bleeding ensues. In this connection the reader is referred to what has been said on preceding pages about these dangers.

(3) *Ventilation*.—Ground vineries are often the precious possession of people who are away from home all day, and have no one on the place on whom to rely for giving any necessary attention. In the morning the sky is cloudy, and storms threaten. The grower has visions of fierce gusts and heavy showers blowing through his ventilators, and shuts the latter down. The weather changes after he has got into the train, as the weather has always persisted in doing since business people first took to gardening, and the sun comes out fiercely. Then those unhappy Vines are scorched up. I am afraid there is no certain road here, for the most careful weather expert may be deceived sometimes; but in a general way the forecasts in the

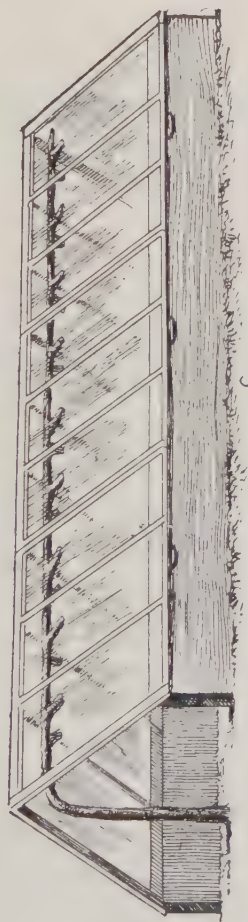


FIG. 79. — GRAPES IN GROUND VINERIES.

C, span-roofed frame Vinery, showing Vine planted at one end, and trained under the ridge.

morning papers are good, and may be followed. Beyond this, it may be suggested that provision should be made for ventilators on each side of all span-roof structures, and in doubtful weather those on the lee side should be opened a little, while those on the windward side are kept shut. Further, the sternest resolution must be come to, and not only come to but adhered to, for early morning ventilation.

(4) *Pruning*.—Circumstances must rule to some extent in this matter, and one very important consideration is the form of the vinery. In the long, low structures usually associated with the name of ground vinery, the best plan—indeed, the only practicable one—is to plant the Vine in such a way that the rod can run along in a horizontal position under the light, and fruiting laterals be trained on it at right angles. I have seen a Vine planted in the centre of such a structure, shortened hard in the winter, two buds selected, and shoots taken from them in opposite directions towards the ends of the house. Another plan is to put a Vine in at one end, and let the

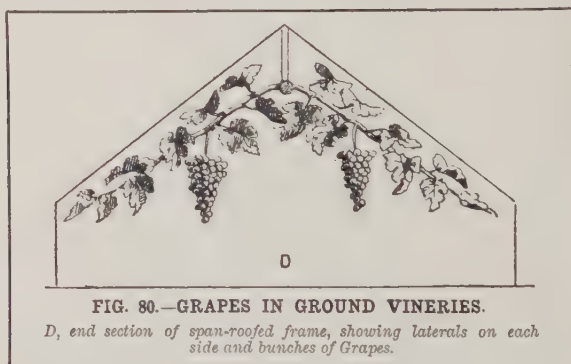


FIG. 80.—GRAPES IN GROUND VINERIES.

D, end section of span-roofed frame, showing laterals on each side and bunches of Grapes.

rod run towards the other end; or put one in at each end, and let them meet in the middle. It is not very material which plan is adopted, so long as this point is kept in mind: The rod must be at least 1 foot from the glass, and the laterals shall not be nearer to each other on opposite sides of the rod than 9 inches, or on the same side of the rod than 18 inches. It may, however, happen to be necessary to keep the fruiting shoots all on one side of the rod, in which case they may be 1 foot apart. Particulars of spur pruning, which is the system that ought to be adopted, have been given in previous pages. Careful attention to stopping is necessary. Without it, the shoots may easily become so tangled a mass that the fruit has no chance.

There is one consideration which the person who wants to indulge in a ground vinery must always keep in view, and it is this: Owing to the very limited room, routine work, particularly tying the shoots and thinning the bunches, has to be carried on under difficulties; therefore have a structure made in sections that can be opened so easily and completely that any part of the Vine may be got at without trouble. Really, every section ought to open freely. The figures given herewith show both a lean-to and a span.

In the former case a low back wall or fence may be utilised, and the lights sloped from it to a still lower wall in front. The span-roof is independent of existing walls. It is made of wood and glass throughout, for the sides are of woodwork, and the lights, which are hinged to a ridge board, rest on them. These wooden sides should have a foundation of a layer of loose, *i.e.* unmortared, bricks, in order to preserve them from damp. The structure should be in a sunny spot, the ends running north and south, and the pitch of the lights rather sharp, to bring them plane to the sun's rays.

Grapes Out of Doors.—The fact that Grapes can be grown in the open air in many parts of Great Britain scarcely needs to be stated, for most people must have observed Vines on cottage walls at some time or other. Unfortunately, the quality of the examples generally seen is not such as to encourage the extension of open-air Grape growing. The Vines are rarely tended with any skill. In many instances they are never touched with the pruning knife, and as a result the growth becomes very rank, the

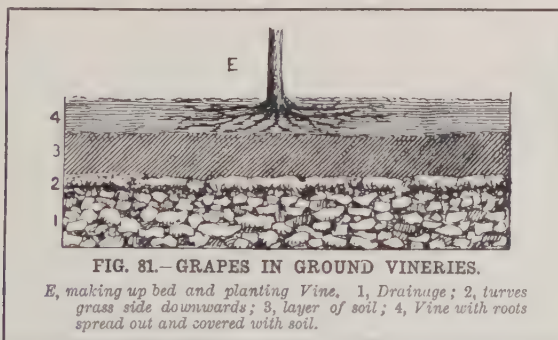


FIG. 81.—GRAPES IN GROUND VINERIES.

E, making up bed and planting Vine. 1, Drainage; 2, turves grass side downwards; 3, layer of soil; 4, Vine with roots spread out and covered with soil.

wood is immature, and the fruit is poor. Under the best of management ripe Grapes can never be ensured; under bad treatment failures are as certain as the day. At the same time, it must be confessed that there is something attractive in no uncommon degree about a Vine on a house wall; and if any person has a mind to try his fortune with one, there is no reason why he should not do so.

In the case of outdoor Vines the best system of training, in my opinion, is to take subsidiary rods at right angles from the main vertical one, about 18 inches apart, and allow them to run to the extremities of the wall. Fruiting laterals can be taken from these, and trained up in the same direction as the leading rod. It is a mistake to allow these laterals to run away at will. They should be stopped and thinned just the same as if the Vines were under glass. It is just as important in the open air as in a vinery, nay more so; for in the former case the difficulties of getting the wood ripe are greater. Many people who are disappointed of a crop of ripe bunches utilise the Grapes for making wine. Miller's Burgundy and Royal Muscadine are two of the best for open-air culture.

Large Vines and Record Bunches.—It may be interesting to refer to one or two very large Vines and bunches of Grapes. Three of the

largest Vines in existence are that at Hampton Court, which was planted in 1769 and covers about 2,000 square feet; the Black Hamburgh at Manresa House, Roehampton, which is about thirty-five years old and has 2,000 feet run of rod; and the Vine at Cumberland House. With respect to bunches, the largest on record weighed 26 lb. 4 oz. The variety was Trebbiano, shown by Mr. Curror of Eskbank. The bunch was 2 feet 3 inches long, and the same across the shoulders - a Goliath indeed. Another gigantic bunch was shown by Mr. Dickson of Arkleton. It weighed 25 lb. 15 oz., but I believe that the grower asserted that it weighed 26 lb. 8 oz. when first cut, and claimed that some berries were lost in transit from vinery to show. The variety was White Nice. Mr. Roberts of Charlville Forest grew a bunch of Gros Guillaume weighing 23 lb. 5 oz., and Mr. Hunter of Lambton exhibited a bunch of Black Hamburgh weighing 21 lb. 12 oz. All these are little short of astounding.



FIRST PRIZE!

Chapter XV.—Medlars and Mulberries.

It is unnecessary, I think, to devote a lengthy chapter to either of these fruits. If a gardening editor were to judge of the popularity of a fruit by the number of inquiries he had about it (and there might easily be worse tests), he would probably say that neither Medlars nor Mulberries stand very high in public favour.

So far as the Medlar is concerned, we have a fruit of the most trivial importance and economic value. A few people like Medlars, and a great many other people make a hollow pretence of doing so, who, if they expressed their real feelings, would declare that a half-rotten Pear is a luxury to them. A Medlar is supposed to be just right for eating (other people would say for flinging into the nearest dustbin) when it is "bletted," which means when it is in a state of decay.

Those people who boast a partiality for Medlars should get the variety called the Nottingham. One way of describing its flavour would be to say that it is the best of all the Medlars; another that it is the least like a putrid fruit of the worst Apple in cultivation.

Medlars are not difficult to grow, inasmuch as they will thrive in soil that suits most respectable fruit trees. As for propagation, it may be effected by grafting them on Pear stocks.

The Mulberry is a very interesting if not a particularly valuable tree. We come across antiquated specimens in old-fashioned gardens, and we look at them, and talk about them, and think how capital it would be to have them ourselves. And then we go and fill up all our space with Apples and Pears and Plums and Cherries, and forget all about the Mulberries. Old trees in pleasure-grounds look very cool, and not a little picturesque, in the summer time, with their dark, rich leafage. But they bear fruit sometimes, and we even see them grown for their fruit quite successfully, as they are by the Duke of Portland at Welbeck. It is important to add that there the trees are trained to walls. I am afraid that anyone residing in the Midlands or the North would come to grief if he attempted to grow and ripen Mulberries in the open.

The Mulberry of our gardens is the Black Mulberry, *Morus nigra*. It is propagated in various ways, but quite easily by layering or inarching. Pruning is the point least understood. Most people let the trees grow at their own sweet will, which is right enough if a big, shady tree is wanted, but wrong if ripe fruit is required. For fruiting purposes Mulberries should be spurred, that is, the shoots stopped in summer and shortened back in winter, very much like a Pear. If they are allowed to become smothered with shoots they will not ripen much fruit.

Chapter XVI.—Melons.

THOSE who are familiar with American humour of the broader sort, and bearing on the gastronomical weaknesses of the negro, cannot have failed to find many references to one particular species of Melon, namely the Water Melon. Sambo Jumbo is supposed to have a pronounced partiality for this fruit, and to have a way of disposing of a 7-pounder for his luncheon with rolled-up eye and rapturous gurgle.

Never having shared his meal, I am unable to say whether his taste is sound. If the Water Melon of his kailyard is the Water Melon of our botanical collections, *Citrullus vulgaris*, then I think we have better material to hand in the many varieties which we possess of the garden Melon, *Cucumis Melo*. This plant being a very easy one to cross, hundreds of new varieties are raised annually. Every other gardener one meets has his own Melon, which his eye and palate endow with fabulous virtues, but which never reaches the pinnacle of fame represented by inclusion in a seedsman's catalogue.

In years gone by Melons were very largely grown on hotbeds, but glass is cheaper nowadays, and consequently most large gardens have their Melon pits—low, sunken structures, with a couple or more of hot water pipes running round them, and a raised floor on which mounds of soil bring the plants close to the glass. Still, Melons may be grown, and well grown, on hotbeds.

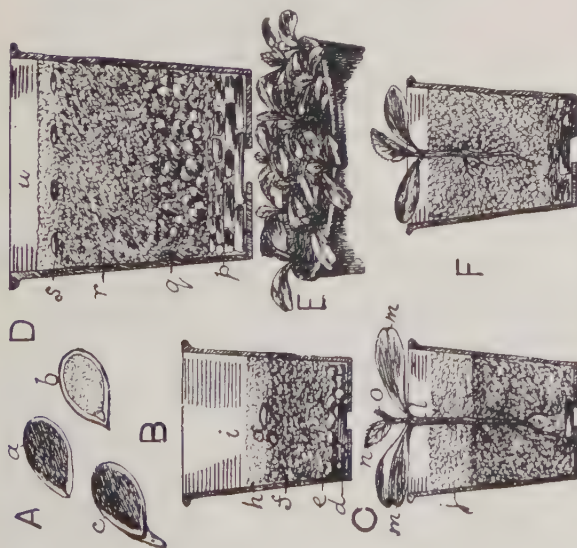
Many gardeners have a belief that Melon seed improves by being carried about for a few months in a waistcoat pocket. Why not a trousers pocket, I should like to know? The flimsy argument that the seeds would be getting lost through being drawn out with money will not satisfy me. Gardeners are not so reckless in handling their loose cash. Again, I should like to ask where the lady gardener comes in—the one, I mean, who does not wear rationals? Is she to pine Melonless because she does not wear a waistcoat? Good Melon seeds should be plump, well rounded, and firm. If the seeds are light, shelly, and hollow, yielding under pressure from the finger tip, I am afraid that you might carry them in your pocket from youth to old age without making plants of them.

Given one firm, plump, ripe seed in the middle of a 3-inch pot, plunged in a propagator or on a hotbed, a plant is tolerably certain. When it has made two or three rough leaves (the smooth seed leaves are not counted) nip off the growing tip in order to encourage a strong break from below. The resulting shoots, to the number of three or four, may be trained to opposite corners of the frame from the central position which the plant itself occupies, and if stopped at two-thirds the distance, will speedily fill the space with laterals. These will probably show fruit; if not, they may be stopped, and will push fruiting sublaterals.

Broadly speaking, what is known as the spur system of Vine pruning, which has been described in Chapter XIV., is the best for house Melons, and it has the great merit of simplicity. A leading shoot is taken up, and side growths ("laterals") are trained from it. It is not often that the strict regularity of Vine training is observed throughout; in fact, the laterals frequently take a turn and are trained in parallel with the leader, but there the system is—a good one to follow, a bad one to beat. To get successional fruit, remove the flowers on some of the first laterals, and stop these at the third joint. Sublaterals will then form, on which fine fruit will be got.

The beginner will speedily observe that he has two kinds of flowers on his Melon plants, one having a small protuberance at its base, the other without. This is common, of course, to the Cucurbitaceæ, and is observable in Cucumbers and Vegetable Marrows. It will not take the grower long to arrive at the conclusion that as Nature put two flowers there two are wanted, but that the flower with the protuberance is the one to give the fruit. This is so, but, differing from Cucumbers, the Melons should be hand fertilised—that is, when the pollen dust in the plain flowers is observed

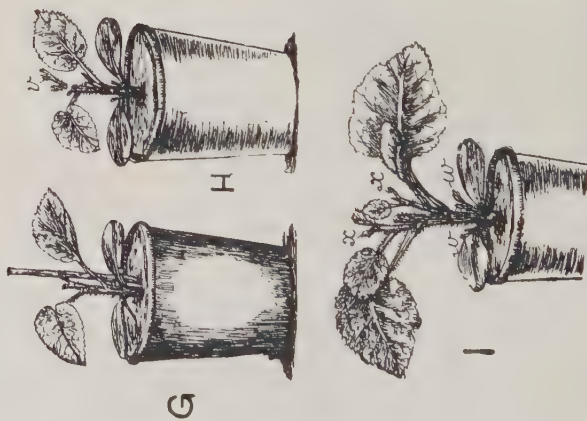
(Continued on page 118.)



REFERENCES.

- A, seed (natural size) : a, external view; b, section showing embryo or young plant, the germination being the commencement of its development; c, germinating and pushing radicle or root.
- B, sowing seed singly in 60's (3-inch) : d, crock over aperture; e, rough parts of compost; f, soil; g, seed; h, fine soil; i, space for top-dressing.
- C, seedling in 3-inch pot earthed up; j, soil added. Definition of plant: k, rootstem and roots; l, stem; m, seed leaves (cotyledons); n, second (usually called rough) leaf; o, growing point.
- D, sowing seeds several in a pot: p, drainage; q, rough parts of compost; r, soil; s, seeds; t, fine soil; u, space for holding water.
- E, pot of seedlings at potting off stage.
- F, seedling potted into 3-inch pot.
(See also page 114.)

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.
FIG. 82.—RAISING MELONS.



REFERENCES.

G, seedling intended for training to trellis, not to be stopped, the leading growth being secured to a state and laterals rubbed off to the height on the stem desired.

H, plant intended for planting in frame or pit and growths trained over bed; u, growing point pinched out at second rough leaf.

I, plant at desirable planting stage; w, laterals from base of seed leaves; x, laterals from axils of rough leaves.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 83.—HOW TO STOP YOUNG MELONS.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG 84.—HOW TO FERTILISE MELONS.

REFERENCES.

- A, portion of plant : a, flowers with stamens ; b, flowers with pistils ; c, laterals stopped one joint beyond fruit ; d, stopped two joints beyond fruit.
- B, staminate flower detached ; e, corolla (part removed) ; f, stamens.
- C, pistillate flower ; g, ovary ; h, stigma ; i, pollen applied.



Photo : G. Gairner, Southampton.

FIG. 85.—A HOUSE OF MELONS, SHOWING THE RESULT OF GOOD PRACTICE.

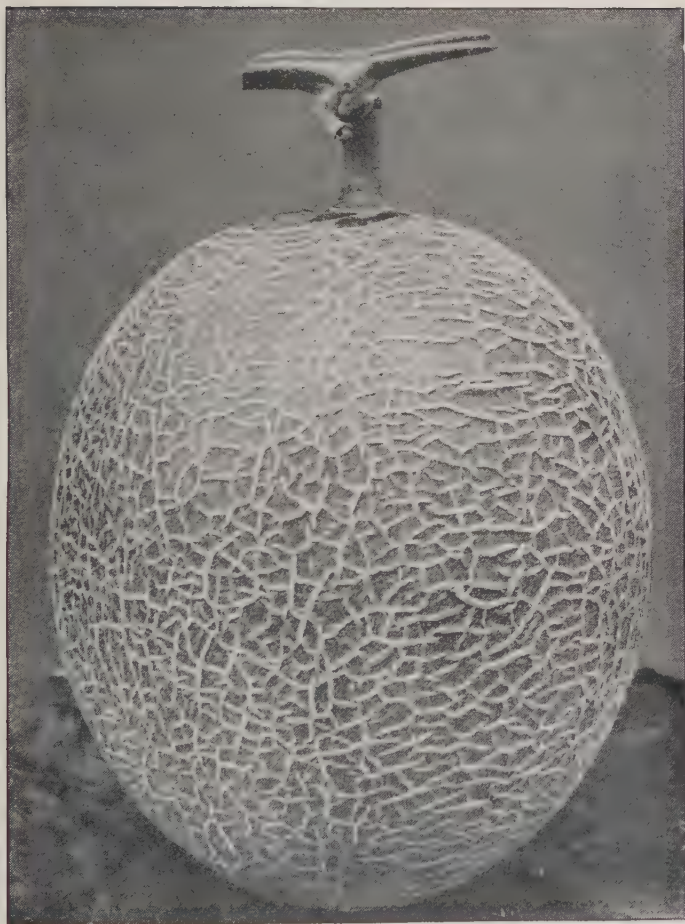


FIG. 86.—A GOOD MELON (SYON HOUSE).

to be loose, the bloom should be picked off and thrust into the centre of the fruiter.

It is a common mistake to have too many Melons on a plant. Generally four fruits are enough if fine specimens are wanted, and the number ought not to exceed six. I am afraid that this is one of the gardening rules more honoured in the breach than in the observance.

It facilitates a good set to provide a brisk bottom heat, give only just sufficient water to prevent flagging, and maintain a warm, dry atmosphere. Pollen is then plentiful. The flowers should be fertilised daily, and when the fruit is seen to be swelling the shoots ought to be stopped one joint beyond the fruit. Afterwards add a top-dressing of warm soil, give water as needed, and syringe gently.

Bearing on the question of watering is that of canker, which frequently attacks the collar, or point of junction between stem and roots, and causes failure. In all cases the soil should be sloped from the stem instead of towards it, so that water may not lodge round the collar. If canker should show itself rub some lime and soot well into the collar.

There is no better compost for Melons than fresh, fibrous loam, with a pint of superphosphate or bone meal to each bushel, although I should use a third part of leaf mould for the seed pots.

Successions may be had by making periodical sowings from the first week in January, in all cases allowing about five weeks to get plants ready for putting out. With a temperature of 65° to 70° at night, rising 5° to 10° by day, it is generally possible to get ripe fruit in about four months. Liquid manure helps the plants when they are swelling their fruit.

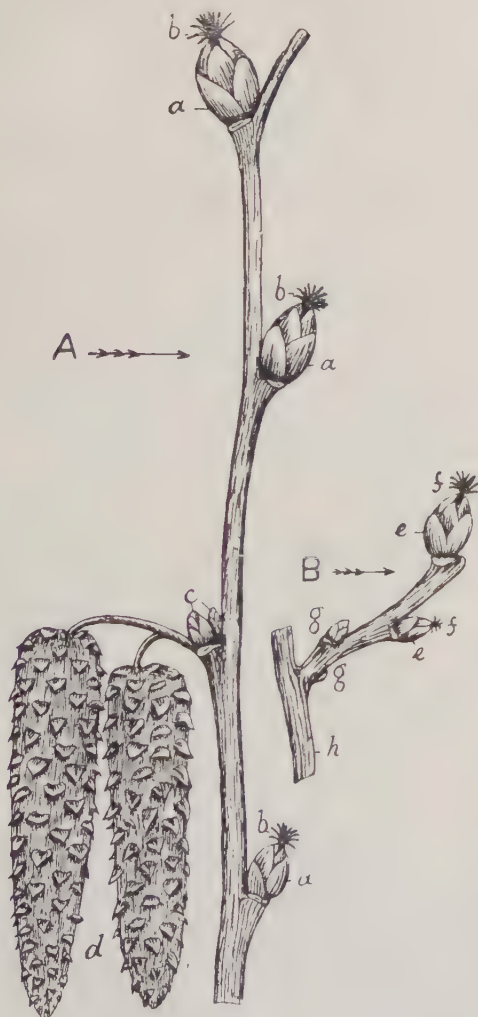
It is rather an invidious business to single out sorts, but I think it may be said that although getting on in years Countess, Hero of Lockinge, and Read's Scarlet-flesh still hold their own. The two first have white flesh, and both have excellent flavour to recommend them. Blenheim Orange is worth mentioning as thriving with less heat than the majority, and Syon House (page 117) is excellent.

Chapter XVII.—Nuts.

I HOPE that no apology is needed for introducing into this series a short chapter on Nuts. The Nut is accepted as a fruit, and it has a recognised position as such in the markets, yet most fruit books ignore it. I do not pretend that the Nut is an important fruit, for it is not; but considering that it is grown by the acre in some parts of Great Britain, and is cultivated by not a few amateurs, there is room for a brief reference.

In the first place, it may be pointed out that most of the cultivated Nuts are varieties of the common Hazel, *Corylus Avellana*. Thus the popular Lambert Filbert becomes botanically *Corylus Avellana Lamberti*. Nuts are spoken of variously as Nuts, Cobs and Filberts, and in case these terms may cause doubt or confusion, it may be well to give the synopsis of the "Fruit Manual." This makes four sections, the first being Filberts, which have oblong Nuts, with husks much longer than the fruit; the second Spanish, with ovate Nuts, and husks as long as, or a little longer than, the fruit; the third Cobs, with Nuts roundish and angular, and the husks as long as, or a little longer than, the fruit; the fourth Hazels, with small, roundish, thick-shelled Nuts, and husks much shorter than the fruit.

(Continued on page 122.)



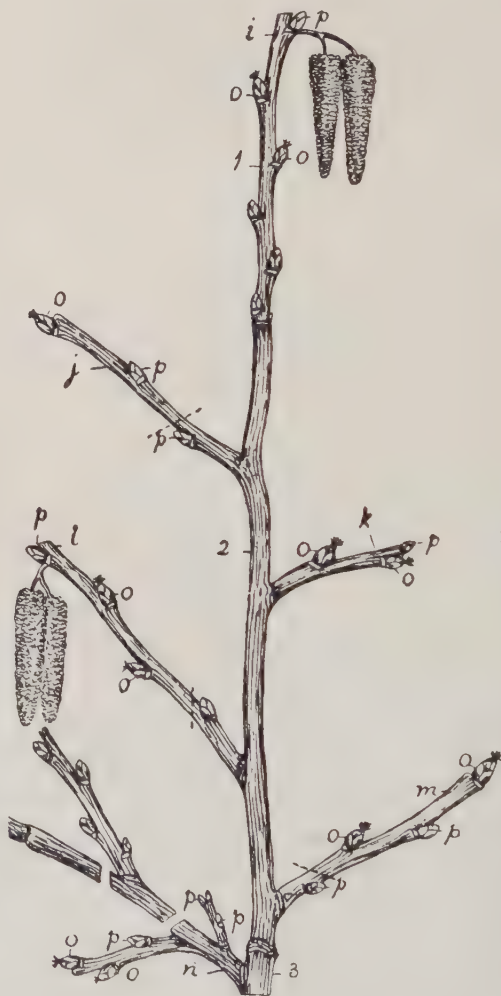
REFERENCES.

A, portion of last year's shoot: *a*, bloom buds; *b*, female flowers; *c*, wood buds; *d*, male flowers or catkins.

B, natural spur produced on wood of preceding year: *e*, bloom buds; *f*, female flower; *g*, wood buds; *h*, two years old wood.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 87.—FRUIT BEARING PARTS OF COB AND FILBERT NUT TREES.



REFERENCES.

- 1, one year old wood ;
 2, two years old wood ; 3, three years old wood ; i, leading growth shortened to a wood bud, with catkins produced from base ; j, side shoot terminated by a bloom bud ; k, natural spur with wood bud at extremity ; l, vigorous side shoot shortened to wood bud with catkins produced from base ; m, short side shoot with bloom and wood buds alternating ; n, side branch that has borne fruit and become weakened in consequence, with points of long and short pruning ; o, bloom buds ; p, wood buds.

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 88.—BEARING BRANCH OF COB NUT TREE WHICH HAS BEEN PRUNED.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 89.—A PRUNED COB NUT TREE.

(Diameter, 10 feet; height, 6 feet.)

Showing how the tree is kept open.

But that these definitions are not always adhered to is shown by the fact that the Lambert Filbert is known as the Kentish Cob, and even as the "Filbert Cob."

With respect to varieties, let it be said at once that the Cosford, Lambert, and White Filbert are three of the very best. With its great productiveness, thin shell, and fine flavour, Cosford seems to me to present itself as the one to choose if a single sort is wanted.

Like most other fruits, Nuts are generally fated to a fairly long occupancy of the ground on which they are planted, and the soil should therefore be well cultivated for them, being trenched and manured. Trees full of suckers should be sternly rejected, and specimens on clean stems chosen. Half-standards or standards, having stems 3 to 6 feet long, can be had, but dwarfs with stems of not more than 2 feet are better. In Kent such trees are common, and they are trained in the shape of a basin, with the centres open. The leaders are shortened soon after planting, and the resulting growths shortened again to provide a choice of shoots for giving the shape of the basin. Shoots that commence to grow towards the centre are at once cut out, and only upward and outward growing branches preserved.

The annual pruning after the tree is formed is a matter for judgment, and the first essential to correct procedure is a knowledge of the character of the tree. Nuts have two forms of flower—the Nut-bearer, a little reddish tuft at the top of a plump bud, and the male, a cylindrical grey catkin, bearing yellowish pollen. Both are necessary to fruitfulness.

Those whose experience is not great enough to enable them to tell what is and what is not going to develop into a Nut-bearing flower should defer pruning until the reddish tufts show, otherwise they may cut away the crop.

When this stage is reached go over each of the main branches in turn, and shorten each of the side shoots bearing both catkins and Nut-bearers to the catkin, or in the absence of a catkin to about 3 inches long, taking care, however, not to cut below the fruit buds. Short shoots terminating in a fruit bud may be left untouched. Older wood that does not show bloom buds may be shortened freely. The figures on pages 119, 120, and 121 give useful details, and may be referred to with advantage.

Chapter XVIII.—Strawberries.

WHEN a writer sets out to deal with a fruit so popular as the Strawberry, he may, I hope, be pardoned if he is tempted to fly to some writer fond of odd phrases and tortuous allusions—Mr. Meredith, for example—in search of a fresh stock of adjectives.

Strawberries have been written up by growers of old-time so often and eloquently that the poor twentieth century scribbler has but a moderate chance of saying anything fresh. He can chat about new varieties, about "new-fangled" manures, and then, as far as freshness goes, his course is run.

It is odd, though, that plenty of bad Strawberries are still grown—as many, perhaps, as ever there were. And here one comes face to face with a fact that must have struck many of my readers before it struck me, and that is, multiply sources of instruction as you will, the fascination of

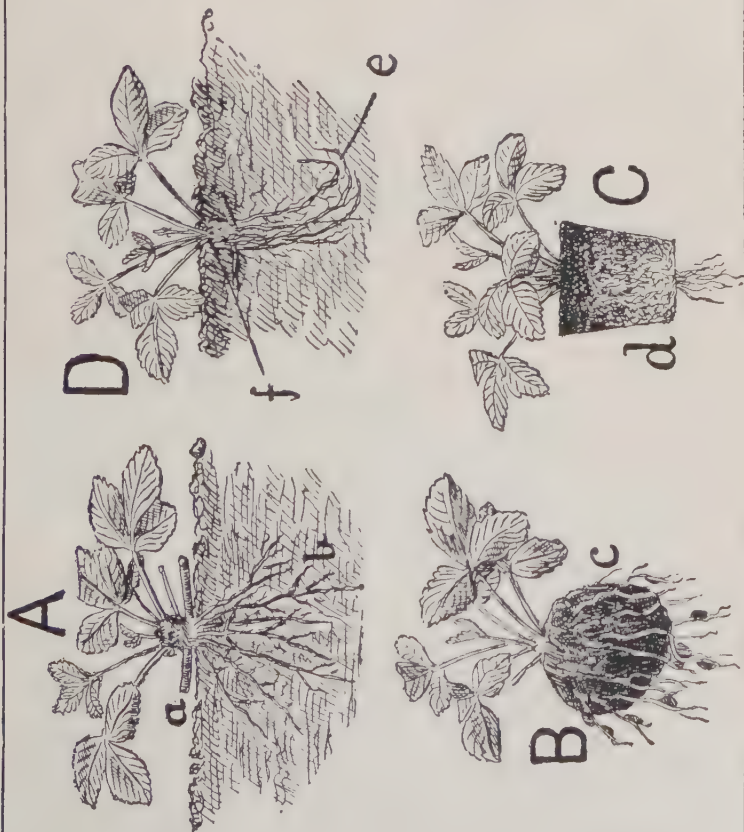
FIG. 90.—STRAWBERRY
PLANTING: THE
WRONG WAY AND
THE RIGHT WAY.

A, Strawberry plant planted in the right way, by means of a trowel or hand fork. The crown of the plant is set at the proper level; this is ensured by leaving on a few inches of the runner *a*. The fibrous roots *b* are spread out in well crumbled soil.

B is a strong plant lifted with a trowel and having a good ball of soil, *c*, adhering to the roots.

C is a plant which has been rooted in a pot sunk in the soil. The lower part of the pot is filled with roots, *d*.

D shows the wrong method of planting. The crown *f* is buried in the soil, and the roots *e* are crammed into a narrow hole made by a dibber. Such planting never yields a crop the summer after planting.



growing things badly is so overpowering that thousands succumb to it. What difficulty is there, to begin with, in propagating Strawberries, that people will persist in sticking to those old beds, with their tangled masses of runners and foliage? They know that the old beds mean a poor supply of fruit; they know that young beds mean good fruit; and yet they go on year after year without making an effort at improvement.

I should like to say to all such people, Lock up the tennis racket, or the bicycle, or the cricket bat, that is the cause of the trouble in the Strawberry bed, for just one day. Get a supply of small pots—2- or 3-inch will do beautifully—fill them right up to the top with good loamy soil, ram it very hard, and place the pots round the plant. Examine the latter for the runners. You will probably find plenty of them from the end of June onward, and here I may say that the earlier the runners are got the better, so long as they are good ones. A good runner is one which has a little tufty plantlet on it, with two or three small leaves—good, that is, if it is on a plant that is fruiting itself, but not good if the plant be barren, for the runner is likely to throw a sterile plant. If the grower has forcing in view he ought to get the first plantlet, for let it be known that there may be several on one runner.

There are growers, and small blame to them, who shirk the trouble of repotting in the case of their forcing stock. Work is heavy and hands are scarce, so they just layer the runners into 6-inch pots straight away. Again, there are people who find squares of turf more convenient than pots, and the plants do well in them. Layering may be done from July onwards, but if it is left till late the runners take root on their own account. It saves a great deal of trouble to take these, and consequently there are plenty of people who do it, but the plants are invariably backward, and rarely fruit the following season.

There is room for latitude as to planting, and this again encourages faulty practice. As a matter of fact, Strawberries may be planted almost any month in the year, but all months are not equally good. August is a splendid month if the plants are strong and the weather showery, because they have a good chance of establishing themselves in September and October. But the plants may be put in almost any time between August and May.

There is plenty of room for differences of opinion on the subject of manures. Many good growers like to dung their ground heavily, and rely on this one heavy dressing to carry the plants through their three years of life. As they get satisfactory results from the system they are apt to think that it is the only one. There is no "one and only" system with plants; Nature did not build them that way. Fine Strawberries can be grown with the dung-cart, and fine ones can be grown without it. It may be of assistance to those who cannot get abundant supplies of good manure if I give a mixture that I have found admirable. It consists of 3 lb. of sulphate of potash, 3 lb. of superphosphate, and 1 lb. of nitrate of soda per square rod. The time to apply it is when the ground is trenched, which should be in the previous autumn or winter, if possible. Half the quantity should be worked into the subsoil, and the remainder mixed with the top spit.

The distance apart at which to plant opens up fresh scope for mischief. Why boggle over a point like this when the space between widely planted Strawberries can always be made use of the first season for prize Onions? One of our best Onion and Strawberry growers always does this. Of course, other people who found it good the first season would want to imitate it



A, taking the runner; *a*, parent plant in fruit, the first runner chosen as the best for layering into pots, especially for early forcing; *b*, single crock over the aperture of a 3-inch pot; *c*, compost; *d*, the runner properly placed in the pot, duly secured with a galvanised wire peg, and the growth beyond the runner cut off; *e*, drainage of a 5-inch pot (or larger) for forcing therein; *f*, soil; *g*, runner at a stage when it is well rooted and may be detached from the parent.



B, young plant transferred from a 3-inch to a 6-inch pot; *h*, drainage; *i*, rougher parts of the compost; *j*, soil runnel firm under and around the plant; *k*, ball of soil and roots of runner; *l*, space for holding water in watering.

C, young plant or runner from the open ground, as sometimes employed for potting at the beginning of September for forcing in 5-inch pots late in the season.
[See also page 127.]

PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 91.—PROPAGATING STRAWBERRIES AND PREPARING PLANTS FOR FORCING IN POTS.

the second, when the Strawberries required more room, and therein they would come to grief. There is no better rule as to planting than to give Sir Joseph Paxton 3 by 2 feet, and the rest $2\frac{1}{2}$ by 2 feet.

It is a great encouragement to young Strawberries to cut off all the runners the first year, and it is a great help to old ones to go over the beds in autumn, trim up the plants, remove all the old leaves, and loosen the soil round the crowns.

If Strawberries intended for forcing are struck into 3-inch pots, as many are, they should be transferred to 6-inch when roots show at the drainage hole. A very good compost for them is sound, fibrous loam 3 parts, leaf mould 1 part, and bone meal at the rate of 1 pint to each bushel of soil. The plants must not be left exposed in the winter, or damp and frost will do sad work between them. The plants must either be put in a frame or else stacked on their sides and covered with bracken or litter.

Forcing may begin in December if there is a warm house, but it is well to bear in mind that there is danger of the plants going blind if a high temperature is maintained in dull weather. A night temperature of 50° to 55° is suitable, with a rise of 10° by day. Beware of letting the plants set and swell a large number of fruits in dull weather. The inevitable result is small and uneven berries. The grower who satisfies himself with half a dozen per plant will come out better than the one who allows the plant to do as it likes. (See next page.)

There are too many varieties of Strawberries. When some daring nurseryman arises who will cut his list down to thirteen or fourteen sorts we shall all bless him—and buy from the other man just the same! That cultivator is the most sensible who fixes on two or three standard sorts which he knows to be suitable and good, and makes them his sheet anchor. Such Strawberries are Sir Joseph Paxton, Royal Sovereign, and The Laxton. I by no means say that these are the best for all soils, but I claim that they average the most successes.

The following are remarkable for fine flavour: British Queen, Dr. Hogg, Countess, and Latest of All.

The following are good late varieties: Givon's Late Prolific, Elton Pine, and Waterloo. The following are good "Perpetuals": St. Antoine de Padoue and St. Joseph. The following are excellent newer sorts: Fillbasket, Mentmore, Scarlet Queen, Thomas Laxton (see page 128), and Louis Gauthier.

The following are good for forcing: La Grosse Sucrée, Royal Sovereign, and George Monro. Excellent garden sorts not included in these lists are President, Newton Seedling, and Sir Charles Napier. Good early varieties are Laxton's No. 1 and Royal Sovereign.



REFERENCES.

- D, plant in 8-inch pot after completing and ripening off growth, with the dead leaves trimmed off, the surface soil stirred, a top-dressing given, the pots washed, and all ready for introducing to the forcing house.
 E, plant at the fruiting stage, with the fruits duly thinned to half a dozen.
 F, similar plant with the fruit not thinned, showing berries smaller and uneven.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.
 FIG. 92.—STRAWBERRIES IN POTS FOR FORCING.



Photo: Cassell & Co.

FIG. 93.—STRAWBERRY THOMAS LAXTON. (*See page 126.*)

Chapter XIX.—Fruit Trees in Pots.

THERE is a branch of fruit growing that used to be known as orchard-house culture in days of old. The system is practised still—nay, more than ever, since glass is so much cheaper than it used to be, but somehow the old phrase is dying out. So full of fascinations is this branch of fruit culture that everybody would practise it if they had the means. As it is, the number of really high-class cultures is not very great. There are two well-known amateurs who indulge themselves in really magnificent collections; they are Mr. Leopold de Rothschild and Mr. Martin Smith, whose talented gardeners are both experts in this splendid art.

There is but one serious drawback to orchard-house culture—it calls for a roomy structure. In Mr. Martin Smith's case the houses were specially built, I believe. They are wide, lofty, and very airy. Moreover, summer quarters of the best have been provided in the form of a large wire enclosure, which secures plenty of air for the plants and at the same time keeps the birds at bay. We cannot all enjoy these luxuries—would that we could! We can, however, manage a few trees—some of us.

Apples, Apricots, Cherries, Peaches, Pears, and Plums may all be grown; it is just a question of convenience and taste. Speaking generally, Apples are not quite so suitable as the real spur-bearers; but there are some sorts that will do exceedingly well, and amongst these, happily, is Cox's Orange Pippin. However, many people prefer to grow their Apples out of doors, and reserve their space under glass for choicer things.

The grower must prepare himself at the outset for a little expense for pots. It is not much use employing small ones, as the root action would be too strong for them. 10, 11, and 12-inch are suitable sizes. It is worth while, too, to take a little trouble to get a suitable mixture of soil. That which is used for the final potting of *Chrysanthemums* would do admirably; but if a special compost is prepared, it might consist with advantage of 3 parts of stiff turfy loam with plenty of fibre, 1 part each of leaf-mould and decayed manure, and a quart of soot and bone meal in equal parts added to each bushel. Remember that a rich, soft, loose compost is to be avoided; the rougher, lumpier, and firmer it is, the better.

The pots should be carefully drained, and there is no better plan than to proceed on the good old lines of placing a large crock over the drainage hole, covering this with smaller pieces, overlapping each other evenly, and putting over these in turn either some coarse lumps of soil or moss, to prevent the finer particles of soil working among the crocks and clogging the drainage.

With respect to the best time to begin, I may say that there is no real necessity to feel bound down to one particular month in autumn, winter, or early spring. Perhaps the work is likely to get done the best in November or December, because at that season there is often a little spare time, and the work is done with due care and deliberation.

(Continued on page 136.)

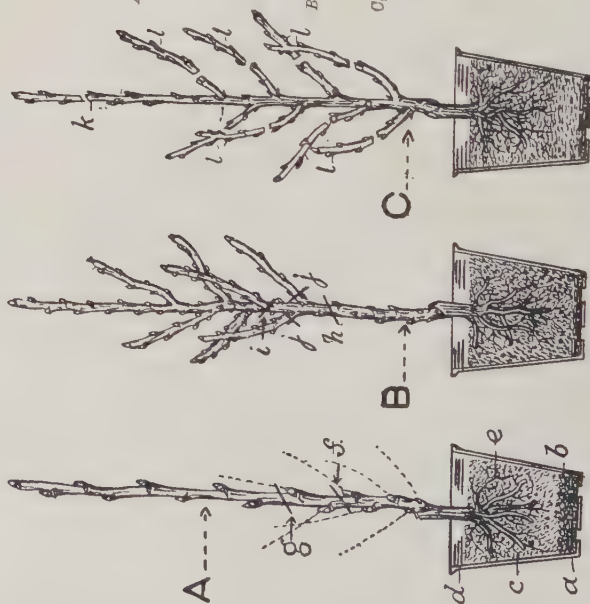
REFERENCES.

A, one year old Pear tree from the bud with a single upright stem, good buds down to the junction of scion and stock; and well ripened wood to the extremity, in an 11-inch pot: *a*, drainage; *b*, layer of the lumpy parts of the compost; *c*, soil; *d*, drainage; *e*, roots—the long shortened so as to admit of soil underneath and at the sides of the pot; *f*, point of heading for a bush, the height from the soil being 12 inches; *g*, point of shortening for forming a well-furnished pyramid, about 18 inches above the soil. The dotted lines indicate the direction of the growth in the following summer.

B, one year old Apricot tree with laterals, properly potted (see references under *A*); *h*, point of heading down to form a bush; *i*, point of shortening the leader to form a pyramid; *j*, laterals cut off close to the basal buds.

C, one year old Peach tree, with a straight stem and well furnished with lateral shoots, duly potted into an 11-inch pot and pruned to form a compact pyramid: *k*, point of shortening leader or stem; *l*, laterals cut as shown, the upper ones to one or two buds, the lower ones to two or three buds.

(Scale $\frac{3}{4}$ inch = 1 foot.)



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

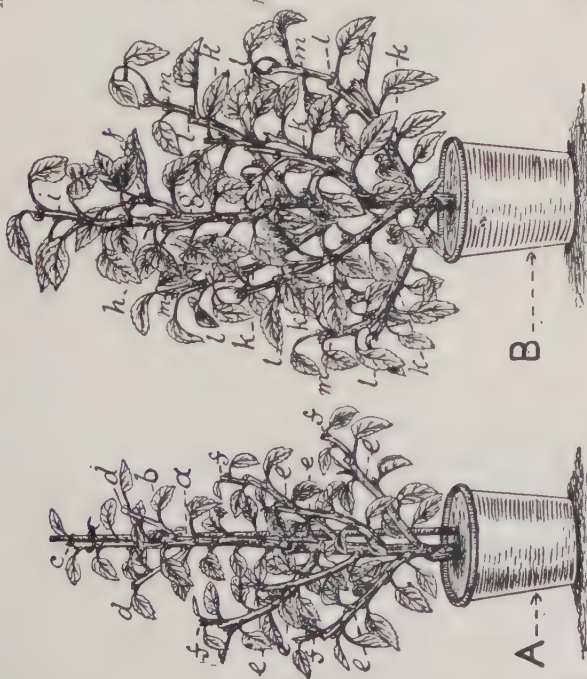
FIG. 94.—FRUIT TREES IN POTS.—FIRST POTTING AND PRUNING.

REFERENCES.

A, Pear tree (page 130, A) shortened in the previous winter to about 18 inches from the soil and intended to form a pyramidal: a, growth from topmost bud, continuation of stem and called the leader; b, inches long; c, leading shoot in continuation of the stem, resulting from the stopping, and not to be pinched; d, side laterals, which have pushed in consequence of stopping the leading growth, these to be pinched at the third leaf; e, side shoots (to form branches) from the stem, which are to be stopped at the end of August to within eight buds of the stem; f, short growths, sometimes pushing late in the season and called laterals, which are not to be pinched unless making more than three buds, then shortened to three leaves.

B, Apricot tree (page 130, B) shortened in the previous winter to about 18 inches from the soil for forming a pyramidal tree; g, growth from uppermost bud trained upright as the leader or continuation of the stem; h, point of stopping (about 10 to 12 inches); i, leading lateral, to be allowed to grow to the extent of 6 to 9 inches, then pinched if necessary, though in the case of moderately growing specimens it is not advisable; j, laterals pinched at about every 2 inches of growth if necessary, but sturdy specimens may make shoots not more than 3 inches long, and these should not be stopped, as they will form blossom buds; k, side shoots (to form branches), all other growths being rubbed off by disbudging, or stopped to 2 inches to form the spurs; l, points of stopping to about 10 inches; m, laterals which have pushed from the uppermost buds, not to be pinched unless exceeding 3 inches in length, but all other laterals and sublaterals to be stopped at 2 inches or thereabouts through the

SECOND.



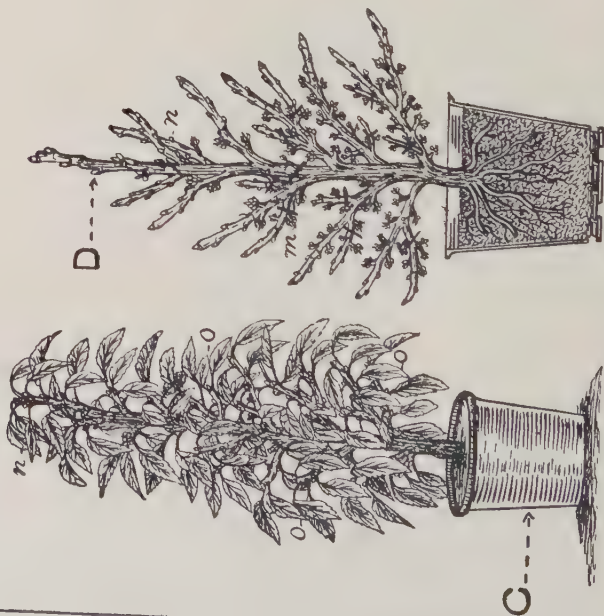
PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 95.—FRUIT TREES IN POTS.—FIRST SUMMER PRUNING AND SHAPING.

REFERENCES.

C, Peach tree (page 130, C) shortened in the previous winter to form a close pyramid; *n*, growth from the uppermost bud not more than 6 inches in length and furnished with blossom buds; *o*, side growths in the form of shoots not exceeding 6 inches in length, with shorter ones and a few spurs. [N.B.—No summer pruning is practised with this short growth. In other instances, with freer growth, every shoot must be stopped at the sixth leaf during the whole of the summer, but shoots not making more than five leaves should not be pinched. Thus the tree will be furnished with short fruit spurs.]

D, three years old pyramidal Cherry tree, lifted each year from the maiden or one year old tree, on Malaleb stock, closely pinched each summer, and in the third autumn pointed for bearing under glass the following season, the pinching causing spurs to form on the current year's growths, thus resulting in a profusion of spurs on stubby shoots; it is advisable to thin these at potting time, partly to balance the top in proportion to the loss of roots consequent on shortening the long ones, and partly to render the head more open; *m*, point of second shortening of leading growth or stem continuation. The lines across the shoots indicate desirable shortening and thinning at potting; *n*, cross shoot to be removed.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 96.—FIRST SUMMER PRUNING OF PEACH AND PRUNING OF THREE YEAR OLD CHERRY.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 97.—FRUIT TREES IN POTS.—A FRUITFUL PYRAMIDAL PEAR TREE.

A, three year old tree from bud or graft (pages 130 and 131, *A*): *a*, leading growth or continuation of stem; *b*, point of pinching leader at 10 to 13 inches of growth; *c*, strongest and uppermost lateral trained erectly as a leader; *d*, side laterals which have not been pinched because they have not made more than three leaves; *e*, shoots produced from preceding year's stem, and not pinched because they have not made more than eight leaves; *f*, continuation growth of side branches not pinched because they have not made over eight leaves; *g*, side growths from branches not pinched because they have not made more than three leaves; *h*, spurs (short shoots with leaves disposed around a prominent central bud); *i*, top-dressing of rich compost; *j*, roots proceeding from holes in the pot into the border.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 98.—FRUIT TREES IN POTS.—APRICOT TREE IN BEARING.

A, three year old pyramidal tree from bud (pages 130 and 131, *B*): *a*, leading growth or continuation of stem; *b*, point of stopping; *c*, lateral taken forward as a continuation of the stem, and not stopped because not exceeding 10 inches in length; *d*, sublateral not pinched because it is not more than 2 inches long; *e*, forked side branches, the leaders not pinched because they are not over 10 inches long—the forking is necessary for the furnishing of the tree with branches; *f*, refractory shoot of side branch pinched, also lateral from it; *g*, spurs; *h*, top-dressing of rich compost; *i*, roots from the pot in the border.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 99.—FRUIT TREES IN POTS.—CLOSE PYRAMIDAL PEACH TREE IN BEARING.

A, tree three years old from the bud (pages 130 and 132, *C*): *a*, leading shoot or continuation of stem; *b*, point of stopping leading shoot (about 6 inches); *c*, leading lateral taken upright as a continuation of the stem, and not stopped because not exceeding 6 inches in length; *d*, laterals not pinched because they are not over 6 inches in length; *e*, side shoots not pruned because they are not over 6 inches long; *f*, top-dressing of rich compost; *g*, roots from the pot running into the border.

It is wise to begin with young trees, because if older ones are not very carefully selected it will be found that their root system is too strong. It would be quite possible to get nice bushes or pyramids of, say, three years old from some nurseries which had a fibrous and compact root system, as a result of having been lifted once or twice; but ordinary nursery stock would be hardly likely to do. If a yearling tree is bought, it should be cut down very much on the lines advocated in an early chapter on shaping and training various forms of trees. So much was said there on this interesting subject that it would be waste of space to go over the whole ground again.

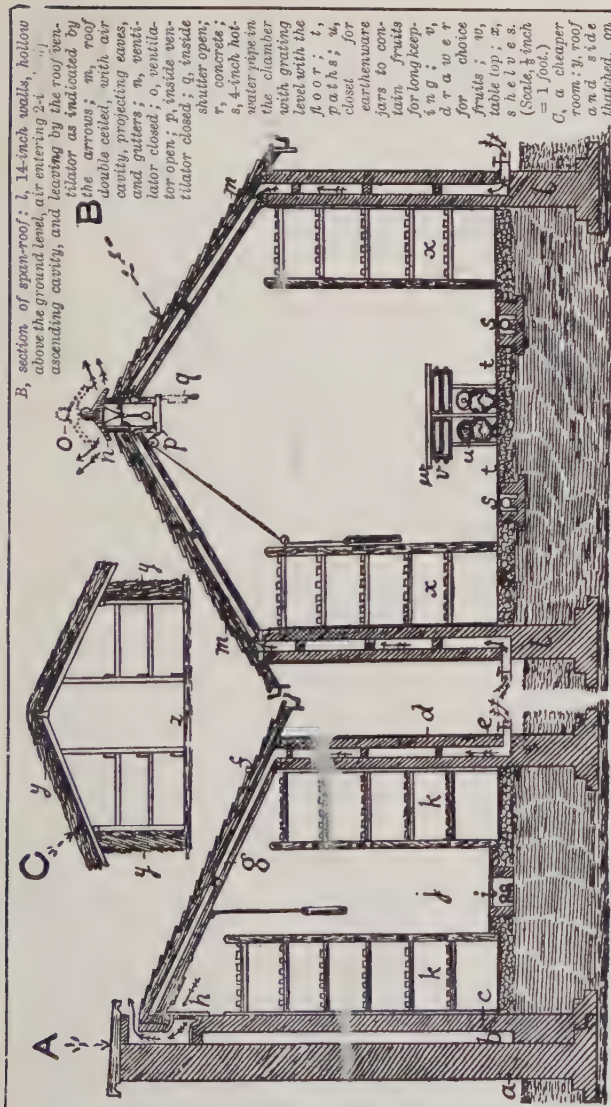
With respect to pruning, somewhat the same might be said. A Pear does not so completely change its nature when it is grown in a pot that entirely new ideas of pruning have to be learned. Generally speaking, the spur system is the best, and spur pruning has been very carefully and fully gone into already. Remember that the essence of it is summer pinching—the stopping of the side shoots to half a dozen leaves, more or less according to their position. As to this, a reference may be made to the figures which appear on pages 130, 131, 132, 133, 134, and 135; they will serve to make the routine quite clear.

Trees that have become established in pots must be looked after carefully, or they will soon grow out of shape. They must also be well supported. Every year they should be taken in hand at a convenient period of the resting season, 2 inches of the top soil removed, and a rich mixture substituted. While in fruit, liquid manure should be given twice a week.

Chapter XX.—Miscellaneous.

THERE are certain matters connected with fruit growing which, being a little outside general culture, are apt to be put altogether in the background. Yet they are quite as important as pruning and propagation. I will refer to a few of these,

Storage.—It has been my lot to deal with the storage of fruit in many circumstances, from the simple loft over a potting shed, with plain, wide, wooden shelves, to the insulated town “cold store,” in which machinery reduces the temperature to near the freezing point. In all circumstances a few simple points stand out above all others. (1) Fruit must not be subjected to hard frost; a degree or two may not hurt it, but on the other hand will certainly not improve it. A temperature of 35° to 40° is the best. (2) Fruit that is expected to keep must be absolutely sound when stored. (3) It should be gathered for storage at a point just in advance of what is known as “dead ripe.” (4) It must be spread to “sweat” before being finally stored away. (5) The temperature must be even, and here double walls for the fruit room come in. (6) The layers should be thin, in order to facilitate examination for the purpose of removing any decaying fruit. (7) There must not be excessive damp. (8) There must be no objects near which are of a strong-smelling nature, or the fruit will become musty, and even offensive. This may sound a very formidable list of conditions, but there is really nothing very terrible about it, and it is nearly as easy to secure them as the reverse. Where a special fruit store is not in the question on account of the small quantity of fruit to be stored, the mistake



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 100.—SECTIONS OF FRUIT ROOMS.

REFERENCES.

A, lean-to against north wall of kitchen garden: *a*, north wall; *b*, 4-inch air cavity insulating the fruit room from the veranda; *c*, 9-inch wall of the garden wall; *d*, 14-inch wall, hollow above the ground level; built in cement; *e*, valves for the aerating cavity; *f*, roof, double ceiled; *g*, air cavity in roof; *h*, ventilator; *i*, 8-inch hot-water pipes in the chamber, with an iron grating level with the pathway; *j*, path; *k*, shelves. (Scale, $\frac{1}{4}$ inch = 1 foot.)

B, section of span-roof: *l*, 14-inch walls, hollow above the ground level, air entering *a*; *u*, ascending cavity, and, leaving by the roof ventilator as indicated by the arrows; *m*, roof doubly ceiled, with air cavity, projecting eaves, and gutters; *n*, ventilator closed; *o*, ventilator open; *p*, inside ventilator closed; *q*, inside shutter open;

r, concrete;
 s, 4-inch hot-
 water pipe in
 the chamber
 with grating
 level with the
 floor; t,
 patas; u,
 closet for
 earthenware
 jars to con-
 tain fruits
 for long keep-
 ing; v, a
 drawer for
 choice
 fruits; w,
 table top; x,
 shelves.
 (Scale, $\frac{1}{8}$ inch.)

C, a cheaper room: y, roof and side thatched, on framework of wood; z, pathway with shelves at sides. (Scale, $\frac{1}{8}$ inch = 1 foot.)

e, valves for the aerating cavity; *f*, roof, double ceiled; *g*, air cavity in roof; *h*, ventilator; *i*, 8-inch hot-water pipes in the chamber, with an iron grating level with the pathway; *j*, path; *k*, shelves. (Scale, $\frac{1}{4}$ inch = 1 foot.)

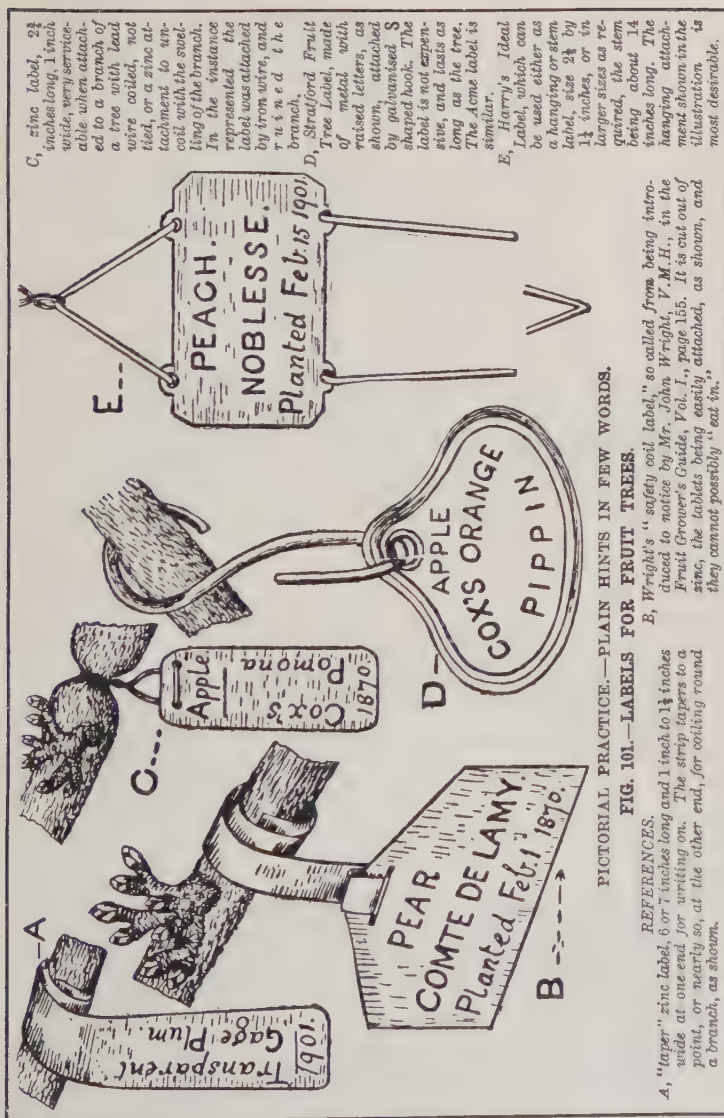
man-to against north wall of kitchen garden: a, north wall; b, 4-inch air cavity insulating the fruit room from the variable warmth and damp of the garden wall; c, 9-inch wall built in cement; d, 14-inch wall hollow above the ground level;

A,

is often made of putting it in a general store, which may contain such assertive articles as Onions, or may abut on a manure yard. The fruit often becomes tainted thus. A general store is rarely a good one, and it is usually better to head the fruit up in barrels. As proving, however, the very simple conditions under which sound fruit will keep, I may say that I have had Apples of many varieties on the wooden floor of a clean attic at the top of a dwelling house facing north-east from September to May, with nothing over them but simple sheets of newspaper in very bad weather. Anyone who is building a small fruit store may have the soil excavated to a depth of 2 feet, unless the land is very heavy and cold. In any case, he should provide double walls of matchboarding, and should thatch the roof to a depth of 1 foot. This will ensure an even temperature at a pleasant halfway stage between dryness and dampness.

Labels.—Here we have another of the “odd matters” connected with fruit which so often lead to disaster. It would be interesting, if it were not so disquieting, for each reader to recall the number of instances which he has seen of wired attachments eating into the wood, causing great, gouty swellings, and often leading to the collapse of branches. It seems to be inevitable with many fruit growers that when they twist a piece of wire round a shoot to hold a label they should assume that as the branch thickens the wire will obligingly become elastic. Anyway, they make a loop that fits close even when the branch is quite small. There is no necessity for circling the branch at all, for the label may be attached by means of a piece of soft zinc wire bent into a hook at one end. Or a coil of zinc may be used. Zinc labels of various shapes and sizes may be bought from seedsmen, with a small bottle of metallic ink, and these are tolerably lasting; but, as pointed out, a bad system of attachment is disastrous. Whatever the labelling system may be, I strongly advocate a plan of the fruit plot being made and put away for reference if required. The shape of the ground can be roughly sketched, and the position of each tree marked, with its name, so that if the label is lost there is something to fall back upon (*see next page*).

Protecting Fruit Blossom.—In the case of large trees of Apples, Pears, Plums, and Cherries growing in the open, the blossom is usually left, perforce, to look after itself. Often nothing happens, sometimes a late frost does great damage. As I have pointed out in earlier chapters, the contingency of loss from this cause ought to be before the grower at the time he is considering the making of his plantation. There is often a choice of sites. One of these, situated in a bottom, is tempting, perhaps, because of its rich soil; but it must be remembered that frosts will be far more severe there than on higher ground. A hilltop is not the best, because the soil is often poor, and there is great exposure to wind; a slope is better. By the exercise of a little foresight in the direction indicated, a natural protection against frost may be secured, and if it will not secure the grower complete protection from loss, it will greatly minimise his risks. In the case of choice wall fruit, such as Peaches and Nectarines, Apricots, and even Pears, protection is needed, and there are several ways of securing it. The coping or projecting ridge fitted at the top of the wall is a great advantage. Scrim and tiffany, both of which may be bought from the seedsman at a very cheap rate, are very light porous cloths which may be attached to the upper part of the wall, or supported on rods, and dropped down in front of the tree when in bloom, and frost threatens (*see page 140*).



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 101.—LABELS FOR FRUIT TREES.

REFERENCES.

A, "taper" zinc label, 6 or 7 inches long and 1 inch to 1½ inches wide at one end for writing on. The strip tapers to a point, or nearly so, at the other end, for coiling round a branch, as shown.

B, Wright's "safety coil label," so called from being introduced to notice by Mr. John Wright, V.M.H., in the Fruit Grower's Guide, Vol. I., page 155. It is cut out of zinc, the labels being easily attached, as shown, and they cannot possibly "eat in."

C, zinc label, 2½ inches long, 1 inch wide, very serviceable when attached to a branch of a tree with lead wire coiled, not tied, or a zinc attachment to uncoil with the swelling of the branch. In the instance represented the label was attached by iron wire, and rusted the branch.

D, Stratford Fruit Tree Label, made of metal, with raised letters, as shown, attached by galvanised S shaped hook. The label is not expensive, and lasts as long as the tree. The Acme label is similar.

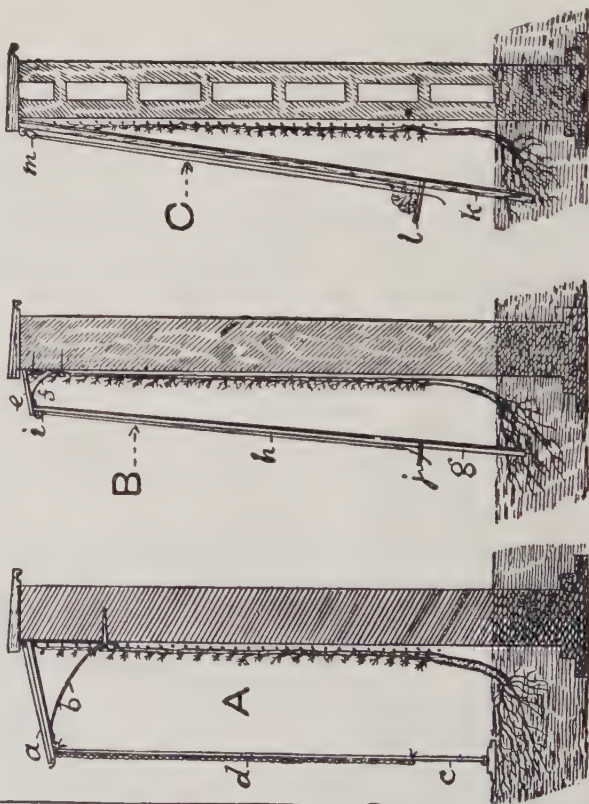
E, Harry's Ideal Label, which can be used either as a hanging or stem label, size 2½ by 1½ inches, or in larger sizes as required, the stem being about 14 inches long. The hanging attachment shown in the illustration is most desirable.

REFERENCES.

A, glazed projecting coping and netting mode; a, glazed projection (2 feet for a 10-foot and 2 feet 6 inches for a 12-foot wall)—the glass is movable; b, iron bracket; c, $\frac{3}{4}$ -inch iron tube affixed to coping just within the eave and let into the stone at the ground line; d, wool netting, $\frac{1}{4}$ -inch mesh, suspended from the front, and raised or lowered according to the weather. This is the most desirable of all protections for choice fruits.

B, wood coping, poles, and canvas method; e, $\frac{3}{4}$ -inch board, not less than 11 inches wide for a 10-foot, and 14 inches for a 12-foot wall; f, iron bracket; g, pole, 2 inches square, set in ground as shown, and affixed to the outer edge of the board, poles about 6 feet apart; h, canvas (serim, a hempen material, is very serviceable); i, pulley for raising and lowering by means of string; j, peg for canvas to rest on when lowered.

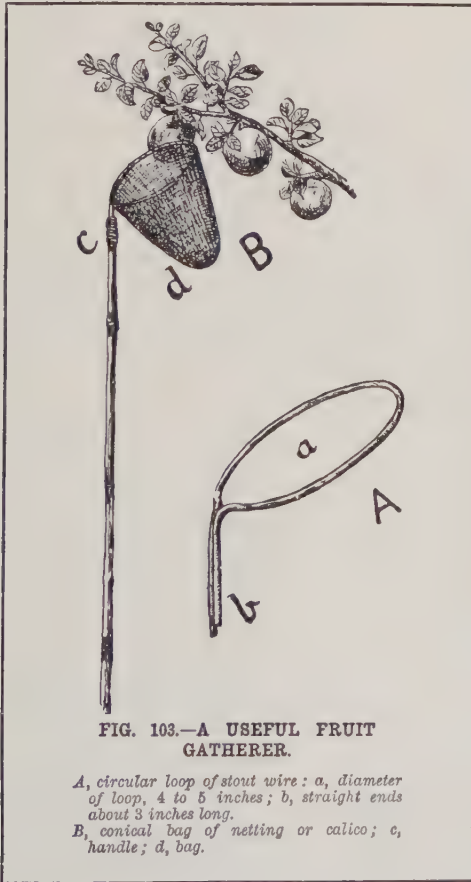
C, ordinary system of poles and canvas: k, pole, 2 inches square, let into ground and "jumped" under wall coping, poles 6 feet asunder; l, hardwood peg, projecting 9 inches forward for the canvas to hang on; m, ring affixed with staple to pole for cord to pass through—the cord is for pulling up or letting down the canvas. The wall in this case is shown hollow.



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 102.—PROTECTING THE BLOSSOM OF WALL FRUIT TREES.

Gathering.—In a long series of chapters, attention has been given to the salient points of fruit cultivation, and it is hoped without any important omission. Yet the subject would be incomplete if no reference were made to gathering and storing fruit. It would be of very little avail to grow good



fruit if it were spoiled after it left the tree. Now fruit is very easily spoiled, and the choicer it is the greater the danger of losing it. There ought not to be any great difficulty in learning to gather fruit properly, because the fruit tells its own story. If fruit is left on the tree until it is quite ripe it usually

falls, because the point of attachment of the stalk changes its character. Therefore, this condition of the stalk is a good guide to the grower. If, on raising the fruit in such a way as to bring a firm yet gentle pressure to bear on the point of attachment, the end of the stalk parts from the spur, the fruit is ready to gather. If the slightest tug or twist is required it is not ready. This rule may be acted upon with all fruit until October. At that period doubts may arise. There will be late varieties of Pears, for example, that are quite hard and obviously unripe. Yet if left on the trees they would probably be injured by frost, and certainly they would not ripen there. Even in these cases it will usually be found that the fruit leaves the tree with only a gentle pressure on the end of the stalk. The rest is a question of storage. The Pears may shrivel or they may mature, according to their treatment, for which see pages 136-7-8. Large quantities of fruit fail to keep well on account of rough handling between tree and store. A bruise means decay, and one bad fruit may contaminate many good ones. Gathering is usually done with the hands direct, and there is no real excuse for bruising; it is only a question of putting the fruit into the basket instead of throwing it in. Various contrivances are brought into play to facilitate gathering fruit, particularly in the case of rather high trees. Unfortunately these sometimes take the shape of a hooked stick or something equally crude, which is only capable of dragging the fruit off. Gathering ought to mean rather more than this. A pouch formed of a piece of netting mounted on a rod (page 141) answers very well, but where access to the fruit can be got the hands should be employed.

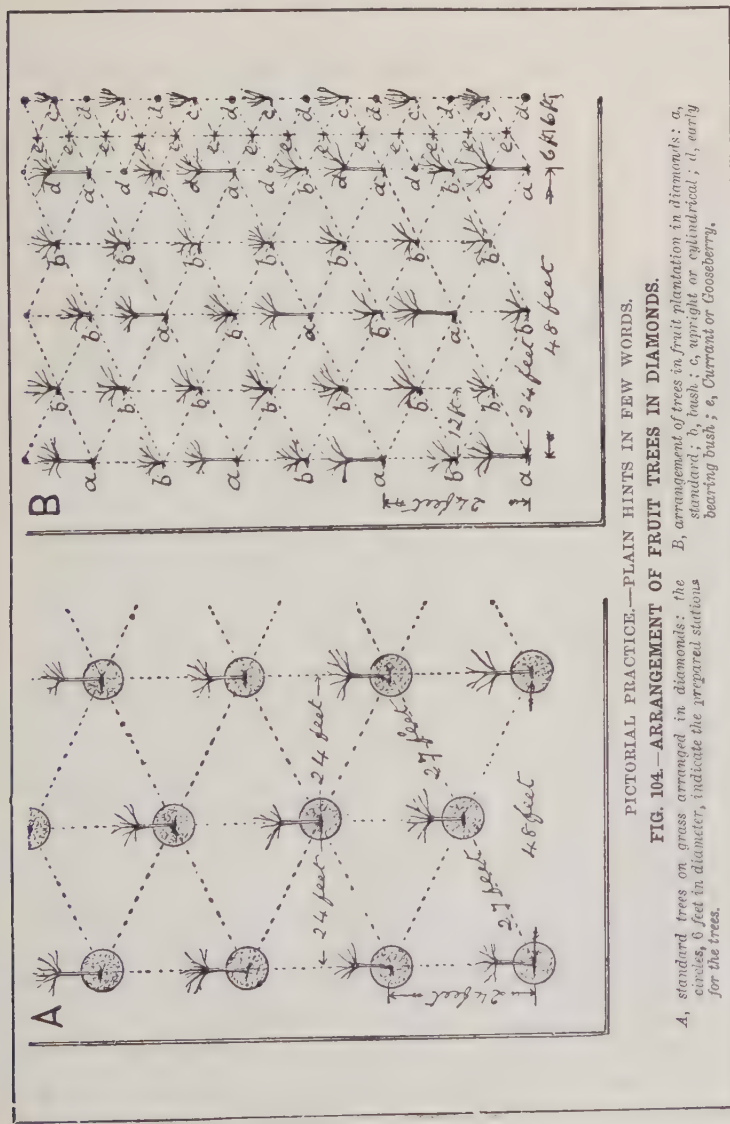
A Useful Table.—It will be of advantage to give a simple rule by means of which the number of trees to plant a particular area of ground can be easily found. There are 43,560 square feet in an acre, and therefore it is only necessary to divide this figure by the distance apart which the plants are to stand in order to arrive at the number required. If, for instance, the grower were going to plant bush Apples 8 by 8 feet, he would simply multiply 8 by 8, giving 64, and divide 43,560 by this product, giving 680, which is approximately the number of trees he would want. I append a table of distance worked out to suit most fruits:—

| <i>Feet.</i> | | | | <i>Plants.</i> | <i>Suiting</i> |
|--------------|---|----|-----|----------------|------------------------------|
| 2 | × | 2 | ... | 10,890 | } Strawberries. |
| 2 | × | 3 | ... | 7,260 | |
| 3 | × | 3 | ... | 4,840 | |
| 4 | × | 4 | ... | 2,722 | } Currants and Gooseberries. |
| 4 | × | 1 | ... | 10,890 | |
| 8 | × | 8 | ... | 680 | } Raspberries. |
| 9 | × | 9 | ... | 537 | |
| 12 | × | 12 | ... | 303 | } Bush Apples and Pears. |
| 15 | × | 15 | ... | 193 | |
| 24 | × | 24 | ... | 75 | |
| 30 | × | 30 | ... | 48 | } Standard Apples, Pears, |
| 36 | × | 36 | ... | 33 | |

(For methods of planting in diamonds and squares see pages 143 and 144.)

Cost of Trees.—In planting fruit on a somewhat extensive scale the cost of the trees is a considerable item. Growers keep it down in various ways, perhaps the commonest being to attend auction sales and “pick up bargains.” That these are often very bad ones is well known to all who

(Continued on page 146.)



PICTORIAL PRACTICE.—PLAIN HINTS IN FEW WORDS.

FIG. 104.—ARRANGEMENT OF FRUIT TREES IN DIAMONDS.

A, standard trees on grass arranged in diamonds: the circles, 6 feet in diameter, indicate the prepared stations for the trees.

B, arrangement of trees in fruit plantations in diamonds: a, standard; b, bush; c, upright or cylindrical; d, early bearing bush; e, Currant or Gooseberry.

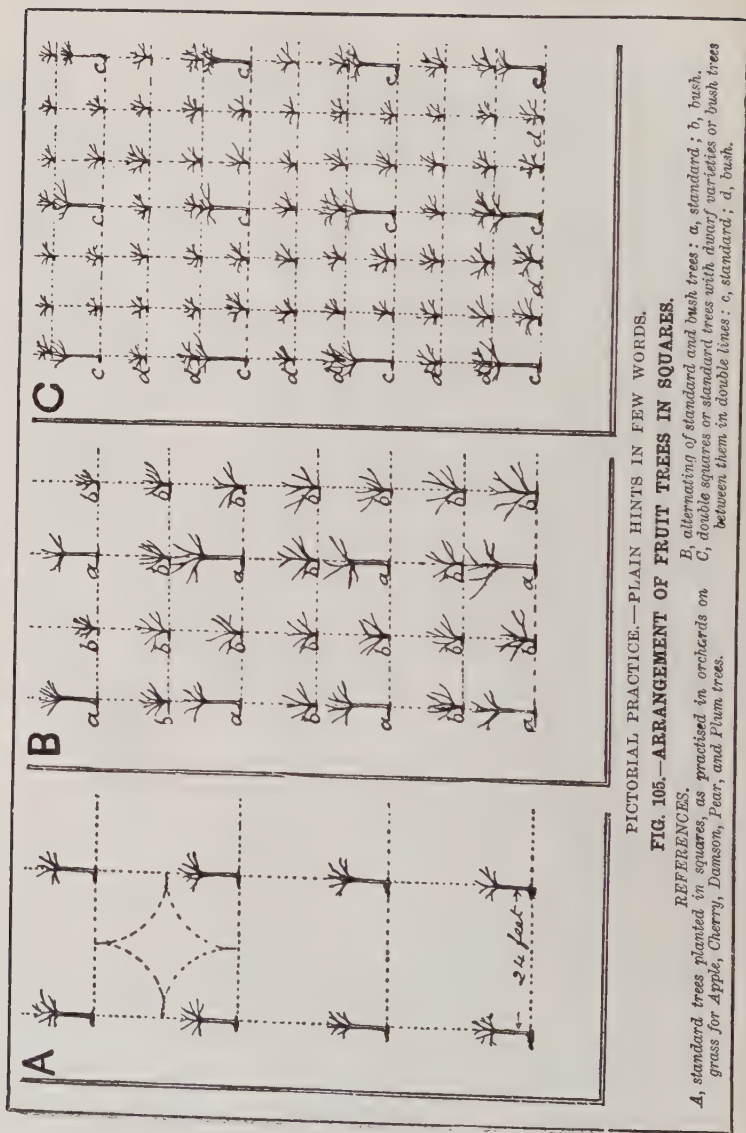




FIG. 106.—ARCHES OF FRUIT IN A SEASIDE GARDEN.

have the opportunity of getting into the fruit districts, and keep their eyes open while there. In the long run I am of opinion that it pays best to go to a fruit nurseryman who has a reputation, and wants to keep it. The first cost of the trees will be greater than if they were bought at the auction, but they will very likely come into profitable bearing sooner, and make better trees, so proving cheaper in the end. The prices of trees vary with their age and strength. I have got very good trees for 1s. each, and I have paid as much as 3s. 6d. for a picked standard Apple four years old. The grower must never grumble if he gets good standards at £5 per 100, bushes at £4 per 100, and pyramids at £6 per 100. More will be asked for picked trees. As regards small fruits, 12s. per 100 is a fair price for Gooseberries, 10s. per 100 for Currants, 3s. per 100 for Raspberries, and 1s. per 100 for Strawberries. Not only will selected specimens be dearer, but special varieties will cost more. Novelties are always dear, because scarce.

Cost of Cultivation.—Labour is scarce and becoming dearer in rural districts, so that there promises to come a time, and that speedily, when the standard items for cost of cultivation will have to be revised. Even as it is there are great variations. As one who has had to employ labour in different parts, I find that in some scarcity of labour and stiffness of soil combine to raise the cost of cultivation to almost double what it is in others where there is more labour and a lighter soil. The following must be taken as approximate: Preparing by simple digging, 4d. to 6d. per rod; preparing by bastard trenching, 1s. to 1s. 6d. per rod; digging between established trees, 30s. per acre; hoeing, 20s. per acre.

Cost of Pruning.—In large cultures pruning, or “cutting,” as it is more commonly termed, is generally done by permanent hands, but there are many instances in which the services of a professional “cutter” are called in. Sometimes he is properly qualified, sometimes he is an impostor; but whatever his abilities he generally expects to be paid. The approximate rates are Apples, 20s. per acre; Currants, 20s. per acre; Gooseberries, 30s. per acre; Raspberries, 12s. per acre. Cherries and Plums are not much pruned, as a rule, in market cultures.

Returns of Fruit.—There is nothing much more misleading than the figures often quoted as returns on given areas of fruit land. My readers have seen plenty of them. You are supposed to plant so many trees per acre, get so much fruit from each, sell it at such a rate, and realise a profit varying from £200 to £2,000 per acre. It is all nonsense, of course. Owing to circumstances over which the grower has no control, such as weather, the returns from fruit are so uncertain that all calculations have a hypothetical basis. No heed must be paid to special results; they nearly always lead to disappointment. For these reasons I prefer not to give figures. Whether fruit as a commercial venture shows a profit or a loss depends largely upon the skill, judgment, and business aptitude of the grower. I could tickle the palates of my readers with some very tempting figures, and they would, perhaps, like me all the better for raising their hopes; but if a number of people quite unfit for fruit growing, and lacking the necessary capital, were thereby led into losing hard-earned savings, as has been the case in the past only too often, I should have nothing to feel proud about. I prefer to give practical information, and leave the rest to the judgment and aptitude of the individual.



FIG. 107.—FOLLOW THE INSTRUCTIONS IN "PICTORIAL PRACTICAL FRUIT GROWING" AND YOU WILL HAVE A BEAUTIFUL GARDEN IN SPRING, WHILE — (See page 148.)

This splendid trophy of British-grown fruit was exhibited by Mr. G. Bunyard at the great fruit show of the Royal Horticultural Society at the Crystal Palace, and shows what is possible with skill and thoroughness. Good fruit can only be had year after year by up-to-date cultivation. Given this, we should hear less of wasted orchards and barren trees.



FIG. 108.—YOU WILL HAVE SPLENDID PRIZE DISHES IN AUTUMN!

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